

SEQUENCE LISTING

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Green, Jonathan
Xie, Sancei

<120> COMPOSITIONS AND METHODS FOR EARLY PREGNANCY DIAGNOSIS

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gttcttgcct atgacactgt tcggatcgaa aacttgcata gcactgacca gccgttggc 480
ctaagcctgc agcaattcgg gtttataat gcacccttg atggtgcct gggcttgc 540
taccccagcc tgcgttccc aggaaccatc cccatcttg acaagctgaa gcaacaagg 600
gccattctg aacctatctt tgccttctac ttgagcaccc gcaaggagaa tggcagtgtg 660
ttgatgttag gtgggtgaa ccactcctac cacaaggaa agctcaactg gataccagt 720
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<210> 12
<211> 1130
<212> DNA
<213> bovidae

<400> 12
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ctggaagaac gagttacag actgtccaag aaagactcca aaataactat tcacccctt 180
aaaactatct ggatatggcc tacgtggta atatcaccat tggaacaccc cctcaggaat 240
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gtccagcctg ttatacacac aaaaccttca atcttcacaa ttcttcagc ttccggcaaa 360
cacaccagcc tattagcatc tcctatggac ctggataat tcaggattt ctggctctg 420
acaccgttcg gatcggaaac ttgttagcc ttaaacagtc gtttggcta agccaggagg 480
aatatgggtt tggatgtgca cccttgcgt ggcgttgcgttgcctac ccctccatca 540
gcatcaaagg tatcatcccc atcttgcata acttgggtc gcaagggtgc ttttctgaac 600
ctgtcttcgc ttctacttg aacacatgcc agccggagg cagtgtggc atgtttgggt 660
gagtggacca ccgctactac aaggagagc tcaactggat accagtgcc caaactcgct 720
actggcagat aagcatgaac cgcatcagca tgaacggaa tggatgtc ttttctcgtg 780
gatgtcaggc cttttggac accgggacat caatgtcca tggcccaaca agactgatca 840
ccaacatcca caagctcatg aacgccaggc accagggttc ggagttgtg gtttcatgtg 900
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cccctcaagc ctacatcacc aaggctcaaa acttgcct tagcatctt catgggggca 1020
cagaaactag ctctccagag acctggatcc tgggtggcgt ctccctgaga cagtacttct 1080
cagttttga tcgaagaaat gacagtattt gcctggcaca ggtgtaaatg 1130

<210> 13
<211> 1173
<212> DNA
<213> bovidae

<400> 13

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aacaatttcc tggaggaaca agttacaga ctgtccaaga atgactccaa aataactatt 180
cacccttga ggaactatct ggatactgcc tacgtggta acatcaccat tgaaacaccc 240
cctcaggagt tccgggtcg tttgacaca ggctcagcta acttgggtt gcccgcac 300
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ttccggaaag taggctcgcc tattaccatc ttctatggat ctgggataat tcagggatt 420
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ccctccatca gcatcaaagg tatcatcccc atcttgaca acttgggtc gacgggtgcc 600
tttctgagc ctgtttcg cttctacttg aacacaaa agccagggg cagtgtggg 660
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tatccactgc gcccctaagc ctacatcatc aagattcaa acaactgccc cagcgtctt 1020
caaggaggca cagaaaatag ctctctaaac acctggatcc ttggtgatat ctcttgagg 1080
cagtaacttct cggttttga tcgtaaaaat agaaggattt gctggcacag gtgggttaccg 1140
actacaagga cgacgatgac aagtaagctt ccg 1173

<210> 14
<211> 1176
<212> DNA
<213> bovidae

<400> 14

cccaagctta tgaagtggct tgtgctcctt gcgctggtgg cttctcaga gtgcataatc 60
aaaataccctc taaggagagt gaagaccatg agcaataccg ccagtggaaa aaacatgctg 120
aacaatttcc tgaagaagca tccttacaga ttgtcccaga tttctttcg tggctcaat 180
ctcactactc acccaactgat gaacatctgg gatttgcct acctggtaa catcaccatt 240
ggAACACCCCCC ctcaggaatt ccaggttctc tttgacacag gctcatctga ctgtgggtc 300
ccctctctct tggcaacag ctcaacctgt gctaaacacg ttatgttcag acatcgtctg 360
tcttccaccc accggcctac caataagacc ttcatgatct tctatgcagt tggaaaatt 420
gaaggagttt ttgttgcgtga cacagttcg attgggacc ttgttaagtgc ggaccagacg 480
tttggcttaa gcattgcaga aactgggtt gagaacacaa ctcttgcattt catcttgggc 540
ttgagctacc ccaacacatc ctgctttgga accatcccc tctttgacaa gctgaagaat 600
gaaggtgcca tttctgagcc tggactacat agtgtgagac gcaaagatga gcaggaggcc 660
agttagtga tttttgggtt tggaccac agttactaca agggagagct caactggta 720
ccattgatca aagcaggcga ctggagtgtt cgtgtggaca gcatcaccat gaaaagagag 780
gttattgctt gttctgacgg ctgcaggggcc ctgggtggaca ccggttcatc acatatccaa 840
ggcccgagaa gactgatcga taacgtacag aagctgatag gcaccatgcc acagggatcc 900
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agcatcagct acacagtgcc agctcaagcc tacatcctca agggttcttag gggccgctgc 1020
tattccaccc ttcaagggca cactatgagt tcacatcag agacctggat cctgggtat 1080
gtcttgcgtga gtcagttt ctgggtctt gatcgaggaa atgacaggat tggcctggca 1140
caggtggta ccgactacaa ggacgacgat gaaagt 1176

<210> 15
<211> 1360
<212> DNA
<213> Felis domestica

<400> 15
agaaaagaag catgaagtgg ctttgggtcc ttgggctggt ggccctctca gagtgcttag 60
tcacaatccc tctgacgagg gtcaagtcca tgcgagaaaaa cctcaggagg aaagacaggc 120
tgaaggatt cctggagaac catccttaca acctggccta caagttgtt gactctgtaa 180
atctggacct ggggatataat tttgaaccga tgaggaacta cctggatctg gcctacgtt 240
gcaccatcg cattggaacg ccccccagg agttcaaggat catcttgac accggctcat 300
ctgacttgcg ggtgcctcc atctactgct ctagccctgc ctgcgctaata cacaacgtct 360
tcaaccctct gcgggcctcc accttccgga tctcggccg gcccattccac ctccagtgacg 420
gctccgggac gatgtcagga tttctggcct acgacaccgt tcgggttccggg ggcctcgtt 480
acgtggccca ggcgttggc ctgagcctga gggagcccg caagttcatg gaataacgcag 540
tttgcacgg catcctggc ctggcctacc ccagcctcag cctcagaggg accgtccctg 600
tcttcgacaa cctgttggaaag cagggtctca tttctcaggaa gctctttgcc ttctacttga 660
gcaaaaagga cgaagaaggc agtgtggta tgttcggccg tggaccac tcctactaca 720
gcggagacct caactgggtg ccgggttcca aacggctgtta ctggcagttt tccatggaca 780
gcatctccat gaacggggaa gtcattgtt gtgacgggtt ctggcaggcc atcattgata 840
caggaacccctc gctgctgatt ggccttccatctc acgttgcattt caacatccag atgatcatcg 900
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gcaaccgtgc ccacccaaa cccgcgcgcg cgtgtgcgcac cacacacaca cacacacccc 1260
gcagtccaggc cattctgccc cagggccgg cttgaactgt gtcttcggct ctgccaatcc 1320
cttctcccttggagaataa aagacctcat cttccacgggtt 1360

<210> 16

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:PCR primer

<400> 16

cccaagctta tgaagtggct tggcttcct

29

<210> 17

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:PCR primer

<400> 17

gggaagctta cttgtcatcg tcgtccttgc agtcggtacc cacctgtgcc aggccaaatcc 60
tgtcatttc 69

<210> 18

<211> 21

<212> DNA

<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR primer

<400> 18
cctcttttgc cttctacttg a

21

<210> 19
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR primer

<400> 19
gcgcctcgagt tacactgccc gtgccaggc

29

<210> 20
<211> 21
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR primer

<400> 20
tgggtaacat caccatttgg a

21

<210> 21
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR primer

<400> 21
tttctgagcc tgttttgcc

20

<210> 22
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:PCR primer

<400> 22
tgggtaacat caccatttgg a c

22

<210> 23
<211> 23
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:PCR primer

<400> 23

caaacatcac cacactgccc tcc

23

<210> 24

<211> 380

<212> PRT

<213> bovidae

<400> 24

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
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Val Lys Ile Pro Leu Arg Arg Leu Lys Thr Met Arg Asn Val Val Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu His Ala Tyr Ser Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Thr His Pro Leu Arg
50 55 60

Asn Ile Lys Asp Leu Val Tyr Met Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Ala Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Asp Phe Cys Thr Ser Pro Ala Cys Ser Thr His Val Arg
100 105 110

Phe Arg His Leu Gln Ser Ser Thr Phe Arg Leu Thr Asn Lys Thr Phe
115 120 125

Arg Ile Thr Tyr Gly Ser Gly Arg Met Lys Gly Val Val Val His Asp
130 135 140

Thr Val Arg Ile Gly Asn Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Ile Glu Glu Tyr Gly Phe Glu Gly Arg Ile Tyr Asp Gly Val Leu
165 170 175

Gly Leu Asn Tyr Pro Asn Ile Ser Phe Ser Gly Ala Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Gln Arg Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Glu Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Glu Gly Glu Leu Asn Trp Val Pro Leu Ile
 225 230 235 240
 Gln Ala Gly Asp Trp Ser Val His Met Asp Arg Ile Ser Ile Glu Arg
 245 250 255
 Lys Ile Ile Ala Cys Ser Asp Gly Cys Lys Ala Leu Val Asp Thr Gly
 260 265 270
 Thr Ser Asp Ile Val Gly Pro Arg Arg Leu Val Asn Asn Ile His Arg
 275 280 285
 Leu Ile Gly Ala Ile Pro Arg Gly Ser Glu His Tyr Val Pro Cys Ser
 290 295 300
 Glu Val Asn Thr Leu Pro Ser Ile Val Phe Thr Ile Asn Gly Ile Asn
 305 310 315 320
 Tyr Pro Val Pro Gly Arg Ala Tyr Ile Leu Lys Asp Asp Arg Gly Arg
 325 330 335
 Cys Tyr Thr Thr Phe Gln Glu Asn Arg Val Ser Ser Ser Thr Glu Thr
 340 345 350
 Trp Tyr Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
 355 360 365
 Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
 370 375 380
 <210> 25
 <211> 376
 <212> PRT
 <213> bovidae
 <400> 25
 Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile
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 Val Ile Leu Pro Leu Lys Lys Met Lys Thr Leu Arg Glu Thr Leu Arg
 20 25 30
 Glu Lys Asn Leu Leu Asn Asn Phe Leu Glu Glu Gln Ala Tyr Arg Leu
 35 40 45
 Ser Lys Asn Asp Ser Lys Ile Thr Ile His Pro Leu Arg Asn Tyr Leu
 50 55 60
 Asp Thr Ala Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro Pro Gln Glu
 65 70 75 80
 Phe Arg Val Val Phe Asp Thr Gly Ser Ala Asn Leu Trp Val Pro Cys
 85 90 95

Ile Thr Cys Thr Ser Pro Ala Cys Tyr Thr His Lys Thr Phe Asn Pro
100 105 110

Gln Asn Ser Ser Ser Phe Arg Glu Val Gly Ser Pro Ile Thr Ile Phe
115 120 125

Tyr Gly Ser Gly Ile Ile Gln Gly Phe Leu Gly Ser Asp Thr Val Arg
130 135 140

Ile Gly Asn Leu Val Ser Pro Glu Gln Ser Phe Gly Leu Ser Leu Glu
145 150 155 160

Glu Tyr Gly Phe Asp Ser Leu Pro Phe Asp Gly Ile Leu Gly Leu Ala
165 170 175

Phe Pro Ala Met Gly Ile Glu Asp Thr Ile Pro Ile Phe Asp Asn Leu
180 185 190

Trp Ser His Gly Ala Phe Ser Glu Pro Val Phe Ala Phe Tyr Leu Asn
195 200 205

Thr Asn Lys Pro Glu Gly Ser Val Val Met Phe Gly Gly Val Asp His
210 215 220

Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Val Ser Gln Thr Ser
225 230 235 240

His Trp Gln Ile Ser Met Asn Asn Ile Ser Met Asn Gly Thr Val Thr
245 250 255

Ala Cys Ser Cys Gly Cys Glu Ala Leu Leu Asp Thr Gly Thr Ser Met
260 265 270

Ile Tyr Gly Pro Thr Lys Leu Val Thr Asn Ile His Lys Leu Met Asn
275 280 285

Ala Arg Leu Glu Asn Ser Glu Tyr Val Val Ser Cys Asp Ala Val Lys
290 295 300

Thr Leu Pro Pro Val Ile Phe Asn Ile Asn Gly Ile Asp Tyr Pro Leu
305 310 315 320

Arg Pro Gln Ala Tyr Ile Ile Lys Ile Gln Asn Ser Cys Arg Ser Val
325 330 335

Phe Gln Gly Gly Thr Glu Asn Ser Ser Leu Asn Thr Trp Ile Leu Gly
340 345 350

Asp Ile Phe Leu Arg Gln Tyr Phe Ser Val Phe Asp Arg Lys Asn Arg
355 360 365

Arg Ile Gly Leu Ala Pro Ala Val
370 375

<210> 26
<211> 381
<212> PRT
<213> bovidae

<400> 26

Met	Asp	Asp	Leu	Val	Leu	Leu	Gly	Leu	Val	Ala	Phe	Ser	Glu	Cys	Ile
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Val	Lys	Ile	Pro	Leu	Arg	Arg	Val	Lys	Thr	Met	Arg	Asn	Thr	Val	Ser
	20						25						30		
Gly	Lys	Asn	Ile	Leu	Asn	Asn	Ile	Leu	Lys	Glu	His	Val	Tyr	Arg	Leu
	35						40					45			
Ser	Gln	Ile	Ser	Phe	Arg	Gly	Ser	Asn	Leu	Thr	Thr	His	Pro	Leu	Arg
	50						55				60				
Asn	Ile	Lys	Asp	Leu	Ile	Tyr	Val	Gly	Asn	Ile	Thr	Ile	Gly	Thr	Pro
	65				70				75				80		
Pro	Gln	Glu	Phe	Gln	Val	Val	Phe	Asp	Thr	Gly	Ser	Ser	Asp	Phe	Trp
		85					90						95		
Val	Pro	Ser	Asp	Phe	Cys	Thr	Ser	Arg	Ala	Cys	Ser	Thr	His	Val	Arg
		100					105					110			
Phe	Arg	His	Leu	Gln	Ser	Ser	Thr	Phe	Arg	Leu	Thr	Asn	Lys	Thr	Phe
		115					120					125			
Arg	Ile	Thr	Tyr	Gly	Ser	Gly	Arg	Met	Lys	Gly	Val	Val	Ala	His	Asp
		130			135				140						
Thr	Val	Arg	Ile	Gly	Asp	Leu	Val	Ser	Thr	Asp	Gln	Pro	Phe	Gly	Leu
		145				150			155			160			
Ser	Val	Glu	Glu	Tyr	Gly	Phe	Glu	Gly	Arg	Ala	Tyr	Tyr	Asp	Gly	Val
			165				170				175				
Leu	Gly	Leu	Asn	Tyr	Pro	Asn	Ile	Ser	Phe	Ser	Gly	Ala	Ile	Pro	Ile
		180					185				190				
Phe	Asp	Asn	Leu	Lys	Asn	Gln	Gly	Ala	Ile	Ser	Glu	Pro	Val	Phe	Ala
		195				200					205				
Ile	Leu	Leu	Ser	Lys	Asp	Glu	Gln	Glu	Gly	Ser	Val	Val	Met	Phe	Gly
		210				215				220					
Gly	Val	Asp	His	Arg	Tyr	Tyr	Glu	Gly	Glu	Leu	Asn	Trp	Val	Pro	Leu
		225				230			235			240			
Ile	Glu	Ala	Gly	Asp	Trp	Ile	Ile	His	Met	Asp	Arg	Ile	Ser	Met	Lys
			245				250				255				

Arg Lys Ile Ile Ala Cys Ser Gly Ser Cys Glu Ala Ile Val Asp Thr
260 265 270

Gly Thr Ser Ala Ile Glu Gly Pro Arg Lys Leu Val Asn Lys Ile His
275 280 285

Lys Leu Ile Gly Ala Arg Pro Arg His Ser Lys Tyr Tyr Ile Ser Cys
290 295 300

Ser Ala Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile
305 310 315 320

Asn Tyr Pro Cys Pro Gly Arg Ala Tyr Val Leu Lys Asp Ser Arg Gly
325 330 335

Arg Cys Tyr Ser Met Phe Gln Glu Asn Lys Val Ser Ser Ser Thr Glu
340 345 350

Thr Trp Ile Leu Gly Asp Val Phe Leu Arg Val Tyr Phe Ser Val Phe
355 360 365

Asp Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 27

<211> 380

<212> PRT

<213> bovidae

<400> 27

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
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Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Thr Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Val Lys Glu His Ala Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Arg Asp Phe Phe Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Glu Leu Trp
85 90 95

Val Pro Ser Ile Phe Cys Asn Ser Ser Thr Cys Ser Lys His Asp Arg
100 105 110

Phe Arg His Leu Glu Ser Ser Thr Phe Arg Leu Ser Arg Arg Thr Phe
115 120 125

Ser Ile Thr Tyr Gly Ser Gly Arg Ile Glu Ala Leu Val Val His Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Gln Phe Gly Leu
145 150 155 160

Cys Leu Glu Glu Ser Gly Phe Glu Gly Met Arg Phe Asp Gly Val Leu
165 170 175

Gly Leu Ser Tyr Thr Asn Ile Ser Pro Ser Gly Ala Ile Pro Ile Phe
180 185 190

Tyr Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Glu Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Ala Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Leu Met
225 230 235 240

Lys Ala Gly Asp Trp Ser Val His Met Asp Arg Ile Ser Met Lys Arg
245 250 255

Lys Val Ile Ala Cys Ser Gly Gly Cys Lys Ala Leu Val Asp Thr Gly
260 265 270

Ser Ser Asp Ile Val Gly Pro Ser Thr Leu Val Asn Asn Ile Trp Lys
275 280 285

Leu Ile Gly Ala Thr Pro Gln Gly Ser Glu His Tyr Val Ser Cys Ser
290 295 300

Ala Val Asn Ser Leu Pro Ser Ile Ile Phe Thr Ile Lys Ser Asn Asn
305 310 315 320

Tyr Arg Val Pro Gly Gln Ala Tyr Ile Leu Lys Asp Ser Arg Gly Arg
325 330 335

Cys Phe Thr Ala Phe Lys Gly His Gln Gln Ser Ser Ser Thr Glu Met
340 345 350

Trp Ile Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Arg Lys Asp Arg Ile Gly Leu Ala Thr Lys Val
370 375 380

<210> 28
<211> 377
<212> PRT
<213> bovidae

<400> 28

Met Lys Trp Leu Val Leu Leu Gly Leu Leu Thr Ser Ser Glu Cys Ile
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Val Ile Leu Pro Leu Thr Lys Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Glu Lys Asn Met Leu Asn Asn Phe Leu Lys Glu Gln Ala Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Ser Arg Gly Ser Asn Ile Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Met Asp Met Val Tyr Val Gly Lys Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Glu Leu Trp
85 90 95

Val Pro Ser Val Phe Cys Pro Ser Ser Ala Cys Ser Thr His Ile Arg
100 105 110

Phe Arg His Leu Glu Ser Ser Thr Ser Gly Leu Thr Gln Lys Thr Phe
115 120 125

Ser Ile Thr Tyr Gly Ser Gly Ser Thr Lys Gly Phe Leu Ala Tyr Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Leu Ser Thr Asp Gln Glu Phe Gly Leu
145 150 155 160

Ser Met Glu Glu His Gly Phe Glu Asp Leu Pro Phe Asp Gly Val Leu
165 170 175

Gly Leu Asn Tyr Pro Asp Met Ser Phe Ile Thr Thr Ile Pro Ile Phe
180 185 190

Asp Asn Leu Lys Asn Gln Gly Ala Phe Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Gly Lys Val Lys Gly Ser Val Val Met Phe Gly Gly Val Asp
210 215 220

His Thr Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile Gln Ala
225 230 235 240

Gly Glu Trp Ser Leu His Met Asp Arg Ile Ser Met Lys Arg Lys Val
245 250 255

Ile Ala Cys Ser Gly Gly Cys Glu Ala Phe Tyr Asp Thr Gly Thr Ser
260 265 270

Leu Ile Leu Gly Pro Arg Arg Leu Val Asn Asn Ile Gln Lys Leu Ile
275 280 285

Gly Ala Thr Pro Gln Gly Ser Glu His Tyr Ile Ser Cys Phe Ala Val
290 295 300

Ile Ser Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile Asn Ile Pro
305 310 315 320

Val Pro Ala Arg Ala Tyr Ile His Lys Asp Ser Arg Gly His Cys Tyr
325 330 335

Pro Thr Phe Lys Glu Asn Thr Val Ser Thr Ser Thr Glu Thr Trp Ile
340 345 350

Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp Arg Gly
355 360 365

Asn Asp Arg Ile Gly Leu Ala Gln Val
370 375

<210> 29
<211> 379
<212> PRT
<213> bovidae

<400> 29
Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Asn Ala Ile Ser
20 25 30

Gly Lys Asn Thr Leu Asn Asn Ile Leu Lys Glu His Ala Tyr Arg Leu
35 40 45

Pro Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr His Pro Leu Arg Asn
50 55 60

Ile Arg Asp Leu Phe Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro Pro
65 70 75 80

Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Asp Leu Trp Val
85 90 95

Ala Ser Ile Phe Cys Asn Ser Ser Cys Ala Ala His Val Arg Phe
100 105 110

Arg His His Gln Ser Ser Thr Phe Arg Pro Thr Asn Lys Thr Phe Arg
115 120 125

Ile Thr Tyr Gly Ser Gly Arg Met Lys Gly Val Val Val His Asp Thr
130 135 140

Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu Cys
145 150 155 160

Leu Lys Asp Ser Gly Phe Lys Gly Ile Pro Phe Asp Gly Ile Leu Gly
165 170 175

Leu Ser Tyr Pro Asn Lys Thr Phe Ser Gly Ala Phe Pro Ile Phe Asp
180 185 190

Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe Tyr
195 200 205

Leu Ser Lys Asp Lys Gln Glu Gly Ser Val Val Met Phe Gly Gly Val
210 215 220

Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile Gln
225 230 235 240

Val Gly Asp Trp Phe Val His Met Asp Arg Thr Thr Met Lys Arg Lys
245 250 255

Val Ile Ala Cys Ser Asp Gly Cys Lys Ala Leu Val Asp Thr Gly Thr
260 265 270

Ser Asp Ile Val Gly Pro Ser Thr Leu Val Asn Asn Ile Trp Lys Leu
275 280 285

Ile Arg Ala Arg Pro Leu Gly Pro Gln Tyr Phe Val Ser Cys Ser Ala
290 295 300

Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile Asn Tyr
305 310 315 320

Arg Leu Pro Ala Arg Ala Tyr Ile His Lys Asp Ser Arg Gly Arg Cys
325 330 335

Tyr Thr Ala Phe Lys Glu His Arg Phe Ser Ser Pro Ile Glu Thr Trp
340 345 350

Leu Leu Gly Asp Val Phe Leu Arg Arg Tyr Phe Ser Val Phe Asp Arg
355 360 365

Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375

<210> 30

<211> 341

<212> PRT

<213> bovidae

<400> 30

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu Asp Pro Tyr Arg Leu
35 40 45

Ser His Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Arg Asp Ile Phe Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Ile Asp Cys Asn Ser Thr Ser Cys Ala Thr His Val Arg
100 105 110

Phe Arg His Leu Gln Ser Ser Thr Phe Arg Pro Thr Asn Lys Thr Phe
115 120 125

Arg Ile Ile Tyr Gly Ser Gly Arg Met Asn Gly Val Ile Ala Tyr Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Val Glu Glu Tyr Gly Phe Ala His Lys Arg Phe Asp Gly Ile Leu
165 170 175

Gly Leu Asn Tyr Trp Asn Leu Ser Trp Ser Lys Ala Met Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Asn Ile Thr Met Asn Arg Glu Val Ile Ala Cys Ser Glu
210 215 220

Gly Cys Ala Ala Leu Val Asp Thr Gly Ser Ser Asn Ile Gln Gly Pro
225 230 235 240

Gly Arg Leu Ile Asp Asn Ile Gln Arg Ile Ile Gly Ala Thr Pro Arg
245 250 255

Gly Ser Lys Tyr Tyr Val Ser Cys Ser Ala Val Asn Ile Leu Pro Ser
260 265 270

Ile Ile Phe Thr Ile Asn Gly Val Asn Tyr Pro Val Pro Pro Arg Ala
275 280 285

Tyr Ile Leu Lys Asp Ser Arg Gly His Cys Tyr Thr Thr Phe Lys Glu
290 295 300

Lys Arg Val Arg Arg Ser Thr Glu Ser Trp Val Leu Gly Glu Val Phe
305 310 315 320

Leu Arg Leu Tyr Phe Ser Val Phe Asp Arg Gly Asn Asp Arg Ile Gly
325 330 335

Leu Ala Arg Arg Val
340

<210> 31
<211> 387
<212> PRT
<213> bovidae

<400> 31
Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Thr Lys Met Lys Thr Met Gln Glu Ala Ile Arg
20 25 30

Glu Lys Gln Leu Leu Glu Asp Phe Leu Asp Glu Gln Pro His Ser Leu
35 40 45

Ser Gln His Ser Asp Pro Asp Lys Lys Phe Ser Ser His Gln Leu Lys
50 55 60

Asn Phe Gln Asn Ala Val Tyr Phe Gly Thr Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Asn Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Val Asp Cys Gln Ser Pro Ser Cys Ser Lys His Lys Arg
100 105 110

Phe Asp Pro Gln Lys Ser Thr Thr Phe Gln Pro Leu Asn Gln Lys Ile
115 120 125

Glu Leu Val Tyr Gly Ser Gly Thr Met Lys Gly Val Leu Gly Ser Asp
130 135 140

Thr Ile Gln Ile Gly Asn Leu Val Ile Val Asn Gln Ile Phe Gly Leu
145 150 155 160

Ser Gln Asn Gln Ser Ser Gly Val Leu Glu Gln Val Pro Tyr Asp Gly
165 170 175

Ile Leu Gly Leu Ala Tyr Pro Ser Leu Ala Ile Gln Gly Thr Thr Pro
180 185 190

Val Phe Asp Asn Leu Lys Asn Arg Glu Val Ile Ser Glu Pro Val Phe
195 200 205

Ala Phe Tyr Leu Ser Ser Arg Pro Glu Asn Ile Ser Thr Val Met Phe
210 215 220

Gly Gly Val Asp His Thr Tyr His Lys Gly Lys Leu Gln Trp Ile Pro
 225 230 235 240
 Val Thr Gln Ala Arg Phe Trp Gln Val Ala Met Ser Ser Met Thr Met
 245 250 255
 Asn Gly Asn Val Val Gly Cys Ser Gln Gly Cys Gln Ala Val Val Asp
 260 265 270
 Thr Gly Thr Ser Leu Leu Val Gly Pro Thr His Leu Val Thr Asp Ile
 275 280 285
 Leu Lys Leu Ile Asn Pro Asn Pro Ile Leu Asn Asp Glu Gln Met Leu
 290 295 300
 Ser Cys Asp Ala Ile Asn Ser Leu Pro Thr Leu Leu Leu Thr Ile Asn
 305 310 315 320
 Gly Ile Val Tyr Pro Val Pro Pro Asp Tyr Tyr Ile Gln Arg Phe Ser
 325 330 335
 Glu Arg Ile Cys Phe Ile Ser Phe Gln Gly Gly Thr Glu Ile Leu Lys
 340 345 350
 Asn Leu Gly Thr Ser Glu Thr Trp Ile Leu Gly Asp Val Phe Leu Arg
 355 360 365
 Leu Tyr Phe Ser Val Tyr Asp Arg Gly Asn Asn Arg Ile Gly Leu Ala
 370 375 380
 Pro Ala Ala
 385
 <210> 32
 <211> 379
 <212> PRT
 <213> bovidae
 <400> 32
 Met Lys Trp Ile Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
 1 5 10 15
 Val Lys Ile Pro Leu Arg Gln Val Lys Thr Met Arg Lys Thr Leu Ser
 20 25 30
 Gly Lys Asn Met Leu Lys Asn Phe Leu Lys Glu His Pro Tyr Arg Leu
 35 40 45
 Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
 50 55 60
 Asn Ile Met Asn Leu Val Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
 65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
 85 90 95

 Val Pro Ser Phe Cys Thr Met Pro Ala Cys Ser Ala Pro Val Trp Phe
 100 105 110

 Arg Gln Leu Gln Ser Ser Thr Phe Gln Pro Thr Asn Lys Thr Phe Thr
 115 120 125

 Ile Thr Tyr Gly Ser Gly Ser Met Lys Gly Phe Leu Ala Tyr Asp Thr
 130 135 140

 Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu Ser
 145 150 155 160

 Val Val Glu Tyr Gly Leu Glu Gly Arg Asn Tyr Asp Gly Val Leu Gly
 165 170 175

 Leu Asn Tyr Pro Asn Ile Ser Phe Ser Gly Ala Ile Pro Ile Phe Asp
 180 185 190

 Asn Leu Lys Asn Gln Gly Ala Ile Ser Glu Pro Val Phe Ala Phe Tyr
 195 200 205

 Leu Ser Lys Asn Lys Gln Glu Gly Ser Val Val Met Phe Gly Gly Val
 210 215 220

 Asp His Gln Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Leu Ile Glu
 225 230 235 240

 Ala Gly Glu Trp Arg Val His Met Asp Arg Ile Ser Met Lys Arg Thr
 245 250 255

 Val Ile Ala Cys Ser Asp Gly Cys Glu Ala Leu Val His Thr Gly Thr
 260 265 270

 Ser His Ile Glu Gly Pro Gly Arg Leu Val Asn Asn Ile His Arg Leu
 275 280 285

 Ile Arg Thr Arg Pro Phe Asp Ser Lys His Tyr Val Ser Cys Phe Ala
 290 295 300

 Thr Lys Tyr Leu Pro Ser Ile Thr Phe Ile Ile Asn Gly Ile Lys Tyr
 305 310 315 320

 Pro Met Thr Ala Arg Ala Tyr Ile Phe Lys Asp Ser Arg Gly Arg Cys
 325 330 335

 Tyr Ser Ala Phe Lys Glu Asn Thr Val Arg Thr Ser Arg Glu Thr Trp
 340 345 350

 Ile Leu Gly Asp Ala Phe Leu Arg Arg Tyr Phe Ser Val Phe Asp Arg
 355 360 365

Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375

<210> 33

<211> 380

<212> PRT

<213> bovidae

<400> 33

Met Lys Trp Leu Gly Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Met
1 5 10 15

Val Ile Ile Pro Leu Arg Gln Met Lys Thr Met Arg Glu Thr Leu Arg
20 25 30

Glu Arg His Leu Leu Thr Asn Phe Ser Glu Glu His Pro Tyr Asn Leu
35 40 45

Ser Gln Lys Ala Ala Asn Asp Gln Asn Ile Ile Tyr His His Pro Leu
50 55 60

Arg Ser Tyr Lys Asp Phe Ser Tyr Ile Gly Asn Ile Asn Ile Gly Thr
65 70 75 80

Pro Pro Gln Glu Phe Gln Val Leu Phe Asp Thr Gly Ser Ser Ser Leu
85 90 95

Trp Val Pro Ser Ile Tyr Cys Gln Ser Ser Ser Cys Tyr Lys His Asn
100 105 110

Ser Phe Val Pro Cys Asn Ser Ser Thr Phe Lys Ala Thr Asn Lys Ile
115 120 125

Phe Asn Thr Asn Tyr Thr Ala Thr Ser Ile Lys Gly Tyr Leu Val Tyr
130 135 140

Asp Thr Val Arg Ile Gly Asn Leu Val Ser Val Ala Gln Pro Phe Gly
145 150 155 160

Leu Ser Leu Lys Glu Phe Gly Phe Asp Asp Val Pro Phe Asp Gly Ile
165 170 175

Leu Gly Leu Gly Tyr Pro Arg Arg Thr Ile Thr Gly Ala Asn Pro Ile
180 185 190

Phe Asp Asn Leu Trp Lys Gln Gly Val Ile Ser Glu Pro Val Phe Ala
195 200 205

Phe Tyr Leu Ser Ser Gln Lys Glu Asn Gly Ser Val Val Met Phe Gly
210 215 220

Gly Val Asn Arg Ala Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Val
225 230 235 240

Ser Gln Val Gly Ser Trp His Ile Asn Ile Asp Ser Ile Ser Met Asn
245 250 255

Gly Thr Val Val Ala Cys Lys Arg Gly Cys Gln Ala Ser Trp Ile Arg
260 265 270

Gly Arg Leu Ser Ala Trp Pro Lys Arg Ile Val Ser Lys Ile Gln Lys
275 280 285

Leu Ile His Ala Arg Pro Ile Asp Arg Glu His Val Val Ser Cys Gln
290 295 300

Ala Ile Gly Thr Leu Pro Pro Ala Val Phe Thr Ile Asn Gly Ile Asp
305 310 315 320

Tyr Pro Val Pro Ala Gln Ala Tyr Ile Gln Ser Leu Ser Gly Tyr Cys
325 330 335

Phe Ser Asn Phe Leu Val Arg Pro Gln Arg Val Asn Glu Ser Glu Thr
340 345 350

Trp Ile Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asn Arg Ile Gly Leu Ala Pro Ala Val
370 375 380

<210> 34

<211> 376

<212> PRT

<213> bovidae

<400> 34

Met Lys Trp Leu Val Phe Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Ile Met Leu Leu Thr Lys Thr Lys Met Arg Glu Ile Trp Arg
20 25 30

Glu Lys Lys Leu Leu Asn Ser Phe Leu Glu Glu Gln Ala Asn Arg Met
35 40 45

Ser Asp Asp Ser Ala Ser Asp Pro Lys Leu Ser Thr His Pro Leu Arg
50 55 60

Asn Ala Leu Asp Met Ala Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Lys Glu Phe Arg Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Ile Lys Cys Ile Ser Pro Ala Cys His Thr His Ile Thr
100 105 110

Phe Asp His His Lys Ser Ser Thr Phe Arg Leu Thr Arg Arg Pro Phe
115 120 125

His Ile Leu Tyr Gly Ser Gly Met Met Asn Gly Val Leu Ala Tyr Asp
130 135 140

Thr Val Arg Ile Gly Lys Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Leu Gln Gln Phe Gly Phe Asp Asn Ala Pro Phe Asp Gly Val Leu
165 170 175

Gly Leu Ser Tyr Pro Ser Leu Ala Val Pro Gly Thr Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Gln Gln Gly Ala Ile Ser Glu Pro Ile Phe Ala Phe
195 200 205

Tyr Leu Ser Thr Arg Lys Glu Asn Gly Ser Val Leu Met Leu Gly Gly
210 215 220

Val Asp His Ser Tyr His Lys Gly Lys Leu Asn Trp Ile Pro Val Ser
225 230 235 240

Gln Thr Lys Ser Trp Leu Ile Thr Val Asp Arg Ile Ser Met Asn Gly
245 250 255

Arg Val Ile Gly Cys Glu His Gly Cys Glu Ala Leu Val Asp Thr Gly
260 265 270

Thr Ser Leu Ile His Gly Pro Ala Arg Pro Val Thr Asn Ile Gln Lys
275 280 285

Phe Ile His Ala Met Pro Tyr Gly Ser Glu Tyr Met Val Leu Cys Pro
290 295 300

Val Ile Ser Ile Leu Pro Pro Val Ile Phe Thr Ile Asn Gly Ile Asp
305 310 315 320

Tyr Ser Val Pro Arg Glu Ala Tyr Ile Gln Lys Ile Ser Asn Ser Leu
325 330 335

Cys Leu Ser Thr Phe His Gly Asp Asp Thr Asp Gln Trp Ile Leu Gly
340 345 350

Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Tyr Asp Arg Gly Asn Asn
355 360 365

Arg Ile Gly Leu Ala Pro Ala Val
370 375

<210> 35
<211> 375
<212> PRT
<213> bovidae

<400> 35
Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile
1 5 10 15
Val Ile Leu Pro Leu Arg Lys Met Lys Thr Leu Arg Glu Thr Leu Arg
20 25 30
Glu Lys Asn Leu Leu Asn Asn Phe Leu Glu Glu Arg Ala Tyr Arg Leu
35 40 45
Ser Lys Lys Asp Ser Lys Ile Thr Ile His Pro Leu Lys Asn Tyr Leu
50 55 60
Asp Met Ala Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro Pro Gln Glu
65 70 75 80
Phe Arg Val Val Phe Asp Thr Gly Ser Ala Asp Leu Trp Val Pro Ser
85 90 95
Ile Ser Cys Val Ser Pro Ala Cys Tyr Thr His Lys Thr Phe Asn Leu
100 105 110
His Asn Ser Ser Ser Phe Gly Gln Thr His Gln Pro Ile Ser Ile Ser
115 120 125
Tyr Gly Pro Gly Ile Ile Gln Gly Phe Leu Gly Ser Asp Thr Val Arg
130 135 140
Ile Gly Asn Leu Val Ser Leu Lys Gln Ser Phe Gly Leu Ser Gln Glu
145 150 155 160
Glu Tyr Gly Phe Asp Gly Ala Pro Phe Asp Gly Val Leu Gly Leu Ala
165 170 175
Tyr Pro Ser Ile Ser Ile Lys Gly Ile Ile Pro Ile Phe Asp Asn Leu
180 185 190
Trp Ser Gln Gly Ala Phe Ser Glu Pro Val Phe Ala Phe Tyr Leu Asn
195 200 205
Thr Cys Gln Pro Glu Gly Ser Val Val Met Phe Gly Gly Val Asp His
210 215 220
Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Val Ser Gln Thr Arg
225 230 235 240
Tyr Trp Gln Ile Ser Met Asn Arg Ile Ser Met Asn Gly Asn Val Thr
245 250 255

Ala Cys Ser Arg Gly Cys Gln Ala Leu Leu Asp Thr Gly Thr Ser Met
260 265 270

Ile His Gly Pro Thr Arg Leu Ile Thr Asn Ile His Lys Leu Met Asn
275 280 285

Ala Arg His Gln Gly Ser Glu Tyr Val Val Ser Cys Asp Ala Val Lys
290 295 300

Thr Leu Pro Pro Val Ile Phe Asn Ile Asn Gly Ile Asp Tyr Pro Leu
305 310 315 320

Pro Pro Gln Ala Tyr Ile Thr Lys Ala Gln Asn Phe Cys Leu Ser Ile
325 330 335

Phe His Gly Gly Thr Glu Thr Ser Ser Pro Glu Thr Trp Ile Leu Gly
340 345 350

Gly Val Phe Leu Arg Gln Tyr Phe Ser Val Phe Asp Arg Arg Asn Asp
355 360 365

Ser Ile Gly Leu Ala Gln Val
370 375

<210> 36

<211> 391

<212> PRT

<213> bovidae

<400> 36

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile
1 5 10 15

Val Ile Leu Pro Leu Lys Lys Met Lys Thr Leu Arg Glu Thr Leu Arg
20 25 30

Glu Lys Asn Leu Leu Asn Asn Phe Leu Glu Glu Gln Ala Tyr Arg Leu
35 40 45

Ser Lys Asn Asp Ser Lys Ile Thr Ile His Pro Leu Arg Asn Tyr Leu
50 55 60

Asp Thr Ala Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro Pro Gln Glu
65 70 75 80

Phe Arg Val Val Phe Asp Thr Gly Ser Ala Asn Leu Trp Val Pro Cys
85 90 95

Ile Thr Cys Thr Ser Pro Ala Cys Tyr Thr His Lys Thr Phe Asn Pro
100 105 110

Gln Asn Ser Ser Ser Phe Arg Glu Val Gly Ser Pro Ile Thr Ile Phe
115 120 125

Tyr Gly Ser Gly Ile Ile Gln Gly Phe Leu Gly Ser Asp Thr Val Arg
130 135 140

Ile Gly Asn Leu Val Ser Leu Lys Gln Ser Phe Gly Leu Ser Gln Glu
145 150 155 160

Glu Tyr Gly Phe Asp Gly Ala Pro Phe Asp Gly Val Leu Gly Leu Ala
165 170 175

Tyr Pro Ser Ile Ser Ile Lys Gly Ile Ile Pro Ile Phe Asp Asn Leu
180 185 190

Trp Ser His Gly Ala Phe Ser Glu Pro Val Phe Ala Phe Tyr Leu Asn
195 200 205

Thr Asn Lys Pro Glu Gly Ser Val Val Met Phe Gly Gly Val Asp His
210 215 220

Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Val Ser Gln Thr Ser
225 230 235 240

His Trp Gln Ile Ser Met Asn Asn Ile Ser Met Asn Gly Thr Val Thr
245 250 255

Ala Cys Ser Cys Gly Cys Glu Ala Leu Leu Asp Thr Gly Thr Ser Met
260 265 270

Ile Tyr Gly Pro Thr Lys Leu Val Thr Asn Ile His Lys Leu Met Asn
275 280 285

Ala Arg Leu Glu Asn Ser Glu Tyr Val Val Ser Cys Asp Ala Val Lys
290 295 300

Thr Leu Pro Pro Val Ile Phe Asn Ile Asn Gly Ile Asp Tyr Pro Leu
305 310 315 320

Arg Pro Gln Ala Tyr Ile Ile Lys Ile Gln Asn Asn Cys Arg Ser Val
325 330 335

Phe Gln Gly Gly Thr Glu Asn Ser Ser Leu Asn Thr Trp Ile Leu Gly
340 345 350

Asp Ile Phe Leu Arg Gln Tyr Phe Ser Val Phe Asp Arg Lys Asn Arg
355 360 365

Arg Ile Cys Trp His Arg Trp Val Pro Thr Thr Arg Thr Thr Met Thr
370 375 380

Ser Lys Leu Pro Pro Lys Leu
385 390

<210> 37
<211> 392
<212> PRT
<213> bovidae

<400> 37
Met Lys Trp Leu Val Leu Leu Ala Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15
Ile Lys Ile Pro Leu Arg Arg Val Lys Thr Met Ser Asn Thr Ala Ser
20 25 30
Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Lys His Pro Tyr Arg Leu
35 40 45
Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Thr His Pro Leu Met
50 55 60
Asn Ile Trp Asp Leu Leu Tyr Leu Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80
Pro Gln Glu Phe Gln Val Leu Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95
Val Pro Ser Leu Leu Cys Asn Ser Ser Thr Cys Ala Lys His Val Met
100 105 110
Phe Arg His Arg Leu Ser Ser Thr Tyr Arg Pro Thr Asn Lys Thr Phe
115 120 125
Met Ile Phe Tyr Ala Val Gly Lys Ile Glu Gly Val Val Val Arg Asp
130 135 140
Thr Val Arg Ile Gly Asp Leu Val Ser Ala Asp Gln Thr Phe Gly Leu
145 150 155 160
Ser Ile Ala Glu Thr Gly Phe Glu Asn Thr Thr Leu Asp Gly Ile Leu
165 170 175
Gly Leu Ser Tyr Pro Asn Thr Ser Cys Phe Gly Thr Ile Pro Ile Phe
180 185 190
Asp Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Leu His Ser
195 200 205
Val Arg Arg Lys Asp Glu Gln Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220
Val Asp His Ser Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile
225 230 235 240
Lys Ala Gly Asp Trp Ser Val Arg Val Asp Ser Ile Thr Met Lys Arg
245 250 255

Glu Val Ile Ala Cys Ser Asp Gly Cys Arg Ala Leu Val Asp Thr Gly
260 265 270

Ser Ser His Ile Gln Gly Pro Gly Arg Leu Ile Asp Asn Val Gln Lys
275 280 285

Leu Ile Gly Thr Met Pro Gln Gly Ser Met His Tyr Val Pro Cys Ser
290 295 300

Ala Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Ser Ile Ser
305 310 315 320

Tyr Thr Val Pro Ala Gln Ala Tyr Ile Leu Lys Gly Ser Arg Gly Arg
325 330 335

Cys Tyr Ser Thr Phe Gln Gly His Thr Met Ser Ser Ser Thr Glu Thr
340 345 350

Trp Ile Leu Gly Asp Val Phe Leu Ser Gln Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Gln Val Gly Thr Asp Tyr Lys
370 375 380

Asp Asp Asp Glu Ser Pro Lys Leu
385 390

<210> 38

<211> 388

<212> PRT

<213> Felis domestica

<400> 38

Met Lys Trp Leu Trp Val Leu Gly Leu Val Ala Leu Ser Glu Cys Leu
1 5 10 15

Val Thr Ile Pro Leu Thr Arg Val Lys Ser Met Arg Glu Asn Leu Arg
20 25 30

Glu Lys Asp Arg Leu Lys Asp Phe Leu Glu Asn His Pro Tyr Asn Leu
35 40 45

Ala Tyr Lys Phe Val Asp Ser Val Asn Leu Asp Leu Gly Ile Tyr Phe
50 55 60

Glu Pro Met Arg Asn Tyr Leu Asp Leu Ala Tyr Val Gly Thr Ile Ser
65 70 75 80

Ile Gly Thr Pro Pro Gln Glu Phe Lys Val Ile Phe Asp Thr Gly Ser
85 90 95

Ser Asp Leu Trp Val Pro Ser Ile Tyr Cys Ser Ser Pro Ala Cys Ala
100 105 110

Asn His Asn Val Phe Asn Pro Leu Arg Ser Ser Thr Phe Arg Ile Ser
115 120 125

Gly Arg Pro Ile His Leu Gln Tyr Gly Ser Gly Thr Met Ser Gly Phe
130 135 140

Leu Ala Tyr Asp Thr Val Arg Phe Gly Gly Leu Val Asp Val Ala Gln
145 150 155 160

Ala Phe Gly Leu Ser Leu Arg Glu Pro Gly Lys Phe Met Glu Tyr Ala
165 170 175

Val Phe Asp Gly Ile Leu Gly Leu Ala Tyr Pro Ser Leu Ser Leu Arg
180 185 190

Gly Thr Val Pro Val Phe Asp Asn Leu Trp Lys Gln Gly Leu Ile Ser
195 200 205

Gln Glu Leu Phe Ala Phe Tyr Leu Ser Lys Lys Asp Glu Glu Gly Ser
210 215 220

Val Val Met Phe Gly Gly Val Asp His Ser Tyr Tyr Ser Gly Asp Leu
225 230 235 240

Asn Trp Val Pro Val Ser Lys Arg Leu Tyr Trp Gln Leu Ser Met Asp
245 250 255

Ser Ile Ser Met Asn Gly Glu Val Ile Ala Cys Asp Gly Gly Cys Gln
260 265 270

Ala Ile Ile Asp Thr Gly Thr Ser Leu Leu Ile Gly Pro Ser His Val
275 280 285

Val Phe Asn Ile Gln Met Ile Ile Gly Ala Asn Gln Ser Tyr Ser Gly
290 295 300

Glu Tyr Val Val Asp Cys Asp Ala Ala Asn Thr Leu Pro Asp Ile Val
305 310 315 320

Phe Thr Ile Asn Gly Ile Asp Tyr Pro Val Pro Ala Ser Ala Tyr Ile
325 330 335

Gln Glu Gly Pro Gln Gly Thr Cys Tyr Ser Gly Phe Asp Glu Ser Gly
340 345 350

Asp Ser Leu Leu Val Ser Asp Ser Trp Ile Leu Gly Asp Val Phe Leu
355 360 365

Arg Leu Tyr Phe Thr Val Phe Asp Arg Glu Asn Asn Arg Ile Gly Leu
370 375 380

Ala Leu Ala Val
385

<210> 39
<211> 1158
<212> DNA
<213> bovidae

<400> 39
aggaaaagaag catgaagtgg cttgtggtcc tcgggctggc ggccttctca gagtgcata 60
tcaaaaatacc tctaaggaga gtgaagacca tgagaaaaac tctcagtgga aaaaacatgc 120
tgaacaattt cttgaaggag gatccttaca gactgtccca gatttcttt cgtggctcaa 180
atcttaactat tcaccgcgt agaaaacatca gagatatctt ctatgtcgga aacatcacca 240
ttggaacacc ccctcaggaa ttccaggtt tcttgacac aggctcatct gacttgtggg 300
tgcctcgat cgattgcaac agtacatcct gtgtacaca tgtaggttc agacatcttc 360
agtcttccac ctccggcct accaataaga ccttcaggat catctatgga tctgggagaa 420
tgaacggagt tattgctt gacacagttc ggattgggaa cttgttaagt accgaccagc 480
catttggct aagcgtggag gaatatgggt ttgcgcacaa aagatttgat ggcacatcttgg 540
gcttgaacta ctggAACCTA tcctggtcta agggcatgcc catcttgac aagctgaaga 600
atgaaggcgc catttctgag cctgtttttg cttctactt gagcaaaagac aagcgggagg 660
gcagtgtggt gatgtttggg ggggtggacc accgctacta caagggagag ctcaagtggg 720
taccactgat ccaaggcgtc gactggagt tacacgtaga ccgcacatcacc atgaacacag 780
aggttattgc ttgttctgaa ggctgtgcgg cccttgtgga cactgggtca tcaaataatcc 840
aaggcccag aagactgatt gataacatac agaggatcat cggcgcacg ccacggggtt 900
ccaagtacta cgtttcatgt tctgcggtca atatcctgcc ctctattatc ttccaccatca 960
acggcgtcaa ctaccaggc ccacctcgag cttacatcct caaggattct agaggccact 1020
gctataaccac cttaaagag aaaagagtga ggagatctac agagagctgg gtccctgggtg 1080
aagtcttcct gaggctgtat ttctcagttt ttgatcgagg aaatgacagg attggcctgg 1140
cacgggcagt gtaactcg 1158

<210> 40
<211> 380
<212> PRT
<213> bovidae

<400> 40
Met Lys Trp Leu Val Val Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu Asp Pro Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Arg Asp Ile Phe Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Ile Asp Cys Asn Ser Thr Ser Cys Ala Thr His Val Arg
100 105 110

Phe Arg His Leu Gln Ser Ser Thr Phe Arg Pro Thr Asn Lys Thr Phe
115 120 125

Arg Ile Ile Tyr Gly Ser Gly Arg Met Asn Gly Val Ile Ala Tyr Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Val Glu Glu Tyr Gly Phe Ala His Lys Arg Phe Asp Gly Ile Leu
165 170 175

Gly Leu Asn Tyr Trp Asn Leu Ser Trp Ser Lys Ala Met Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Lys Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Lys Trp Val Pro Leu Ile
225 230 235 240

Gln Ala Val Asp Trp Ser Val His Val Asp Arg Ile Thr Met Asn Arg
245 250 255

Glu Val Ile Ala Cys Ser Glu Gly Cys Ala Ala Leu Val Asp Thr Gly
260 265 270

Ser Ser Asn Ile Gln Gly Pro Arg Arg Leu Ile Asp Asn Ile Gln Arg
275 280 285

Ile Ile Gly Ala Thr Pro Arg Gly Ser Lys Tyr Tyr Val Ser Cys Ser
290 295 300

Ala Val Asn Ile Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Val Asn
305 310 315 320

Tyr Pro Val Pro Pro Arg Ala Tyr Ile Leu Lys Asp Ser Arg Gly His
325 330 335

Cys Tyr Thr Thr Phe Lys Glu Lys Arg Val Arg Arg Ser Thr Glu Ser
340 345 350

Trp Val Leu Gly Glu Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 41
<211> 1155
<212> DNA
<213> bovidae

<400> 41
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tgaagaattt cttgaaggag catccttaca gactgtccca gatttcttt cgtggctcaa 180
atctaactat tcacccgctg aggaacatca tgaatttggt ctacgtgggt aacatcacca 240
ttggaacacc ccctcaggaa ttccaggtt gcttgcacac aggctcatct gacttgtggg 300
tgccttcctt ttgtaccatg ccagcatgct ctgcacccgtt ttggttcaga caacttcagt 360
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aagggtccat ttctgagcct gttttgcct tctacttgag caaaaacaag caggagggca 660
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cactgattga agcaggcgaa tggagagttt acatggaccc catctccatg aaaagaacgg 780
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ggcagtgtactcg 1155

<210> 42
<211> 379
<212> PRT
<213> bovidae

<400> 42
Met Lys Trp Ile Val Leu Leu Gly Leu Met Ala Phe Ser Glu Cys Ile
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Val Gln Ile Pro Leu Arg Gln Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Lys Asn Phe Leu Lys Glu His Pro Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Met Asn Leu Val Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Phe Cys Thr Met Pro Ala Cys Ser Ala Pro Val Trp Phe
100 105 110

Arg Gln Leu Gln Ser Ser Thr Phe Gln Pro Thr Asn Lys Thr Phe Thr
115 120 125

Ile Thr Tyr Gly Ser Gly Ser Met Lys Gly Phe Leu Ala Tyr Asp Thr
130 135 140

Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu Ser
145 150 155 160

Val Val Glu Tyr Gly Leu Glu Gly Arg Asn Tyr Asp Gly Ala Leu Gly
165 170 175

Leu Asn Tyr Pro Asn Ile Ser Phe Ser Gly Ala Ile Pro Ile Phe Asp
180 185 190

Asn Leu Lys Asn Gln Gly Ala Ile Ser Glu Pro Val Phe Ala Phe Tyr
195 200 205

Leu Ser Lys Asn Lys Gln Glu Gly Ser Val Val Met Phe Gly Gly Val
210 215 220

Asp His Gln Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Leu Ile Glu
225 230 235 240

Ala Gly Glu Trp Arg Val His Met Asp Arg Ile Ser Met Lys Arg Thr
245 250 255

Val Ile Ala Cys Ser Asp Gly Cys Glu Ala Leu Val His Thr Gly Thr
260 265 270

Ser His Ile Glu Gly Pro Gly Arg Leu Val Asn Asn Ile His Arg Leu
275 280 285

Ile Arg Thr Arg Pro Phe Asp Ser Lys His Tyr Val Ser Cys Phe Ala
290 295 300

Thr Asn Thr Leu Pro Ser Ile Thr Phe Ile Ile Asn Gly Ile Lys Tyr
305 310 315 320

Pro Met Thr Ala Arg Ala Tyr Ile Phe Lys Asp Ser Arg Gly Arg Cys
325 330 335

Tyr Ser Ala Phe Lys Glu Asn Thr Val Arg Thr Ser Arg Glu Thr Trp
340 345 350

Ile Leu Gly Asp Ala Phe Leu Arg Arg Tyr Phe Ser Val Phe Asp Arg
355 360 365

Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375

<210> 43
<211> 1154
<212> DNA
<213> bovidae

<400> 43
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tgaacaattt cctgaaggag catgcttaca gactgtcca gatttctttt catggctcaa
atctaactat tcacccgctg agaaacatca gggatttggt ctacatgggt aacatcacca
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gctatagcag cttcaagag accactgtga gtccatctac agagacctgg atccctgggt
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cacgggcagt gttaa

<210> 44
<211> 380
<212> PRT
<213> bovidae

<400> 44
Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Val
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Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Thr Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu His Ala Tyr Arg Leu
 35 40 45

Ser Gln Ile Ser Phe His Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn	Ile	Arg	Asp	Leu	Phe	Tyr	Met	Gly	Asn	Ile	Thr	Ile	Gly	Thr	Pro
65					70						75				80

Pro Gln Glu Phe Leu Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Asp Phe Cys Thr Ser Pro Ala Cys Ser Lys His Phe Arg
100 105 110

Phe Arg His Leu Gln Ser Ser Thr Phe Arg Leu Thr Asn Lys Thr Phe
115 120 125

Ser Ile Glu Tyr Gly Ser Gly Thr Met Glu Gly Ile Val Ala His Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Met Thr Glu Ser Gly Phe Glu Gly Ile Pro Phe Asp Gly Val Leu
165 170 175

Gly Leu Asn Tyr Pro Asn Ile Ser Phe Ser Gly Ala Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Gln Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Glu Gln Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Lys Trp Val Pro Leu Ile
225 230 235 240

Glu Ala Gly Asp Trp Ile Val His Met Asp Cys Ile Ser Met Arg Arg
245 250 255

Lys Val Ile Ala Cys Ser Gly Gly Cys Glu Ala Val Val Asp Thr Gly
260 265 270

Val Ser Met Ile Lys Gly Pro Lys Thr Leu Val Asp Asn Ile Gln Lys
275 280 285

Leu Ile Gly Ala Thr Leu Arg Gly Phe Lys His Tyr Val Ser Cys Ser
290 295 300

Ala Val Asp Thr Leu Pro Ser Ile Thr Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Arg Val Pro Ala Arg Ala Tyr Ile Leu Lys Asp Ser Arg Gly Cys
325 330 335

Cys Tyr Ser Ser Phe Gln Glu Thr Thr Val Ser Pro Ser Thr Glu Thr
340 345 350

Trp Ile Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 45
<211> 1168
<212> DNA
<213> bovidae

<400> 45
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atctaactac tctggcgctg agaaacatca gagatatgct ctacgtggg aacatcacca 240
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gcagtgtggg gatgtttggg ggggtggacc accgctacta caagggagag ctcaactggg 720
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cacgggcagt gtaactcgaa tcaacttgc 1168

<210> 46
<211> 380
<212> PRT
<213> bovidae

<400> 46
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Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Thr Leu Asn Asn Phe Leu Lys Glu His Pro Tyr Arg Leu
35 40 45

Ser His Ile Ser Phe Arg Gly Ser Asn Leu Thr Thr Leu Pro Leu Arg
50 55 60

Asn Ile Arg Asp Met Leu Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Asp Phe Cys Thr Ser Pro Ala Cys Ser Thr His Val Arg
100 105 110

Phe Arg His Phe Gln Ser Ser Thr Phe Arg Pro Thr Thr Lys Thr Phe
115 120 125

Arg Ile Ile Tyr Gly Ser Gly Arg Met Lys Gly Val Val Ala His Asp
130 135 140

Thr Val Arg Ile Gly Asn Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Met Ala Glu Tyr Gly Leu Glu Ser Arg Arg Phe Asp Gly Ile Leu
165 170 175

Gly Leu Asn Tyr Pro Asn Leu Ser Cys Ser Gly Ala Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Gln Gly Ala Ile Ser Asp Pro Ile Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Lys Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile
225 230 235 240

Arg Ala Gly Asp Trp Ile Val His Val Asp Arg Ile Thr Met Lys Arg
245 250 255

Glu Val Ile Ala Cys Ser Asp Gly Cys Ala Ala Leu Val Asp Thr Gly
260 265 270

Thr Ser Leu Ile Gln Gly Pro Gly Arg Val Ile Asp Asn Ile His Lys
275 280 285

Leu Ile Gly Ala Thr Pro Arg Gly Ser Lys His Tyr Val Ser Cys Ser
290 295 300

Val Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Ala Pro Ala Tyr Ile Leu Lys Asp Ser Arg Gly Tyr
325 330 335

Cys Tyr Thr Ala Phe Lys Glu Gln Arg Val Arg Arg Ser Thr Glu Ser
340 345 350

Trp Leu Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 47
<211> 1158
<212> DNA
<213> bovidae

<400> 47
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atctaactat tcacccactg agaaaacatca tggatatgct ctacgtgggt aacatcacca 240
ttgaaacacc ccctcaggaa ttccaggtt tcttgacac aggctcatct gacttgtggg 300
tgccttcgt ctttgccaa agtctagcct gtgctacaaa ggttatgttc atacatcttc 360
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tgaaggact tcttgttat gacactgttc ggattgggga ccttgttaagt actgaccagc 480
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gcttgaacta tccgaacatg tccttctctg gagccatccc catcttgac aacctgaaga 600
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gcagtgtgggt gatgtttgggt ggggtggacc accgctacta caagggagag ctcaactggg 720
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cacgggcagt gtaactcg 1158

<210> 48
<211> 380
<212> PRT
<213> bovidae

<400> 48
Met Lys Trp Leu Val Leu Leu Trp Leu Val Ala Phe Ser Glu Cys Ile
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Val Lys Ile Pro Leu Arg Gln Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Thr Leu Asn Asn Phe Leu Lys Glu His Thr Tyr Ser Leu
35 40 45

Ser Gln Ile Ser Ser Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Met Asp Met Leu Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Val Phe Cys Gln Ser Leu Ala Cys Ala Thr Lys Val Met
100 105 110

Phe Ile His Leu His Ser Ser Thr Phe Arg His Thr Gln Lys Val Phe
115 120 125

Asn Ile Lys Tyr Asn Thr Gly Arg Met Lys Gly Leu Leu Val Tyr Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Cys Ile
145 150 155 160

Ser Leu Ala Glu Val Gly Phe Asp Gly Ile Pro Phe Asp Gly Val Leu
165 170 175

Gly Leu Asn Tyr Pro Asn Met Ser Phe Ser Gly Ala Ile Pro Ile Phe
180 185 190

Asp Asn Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Lys Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile
225 230 235 240

Gln Ala Gly Gly Trp Thr Val His Val Asp Arg Ile Ser Met Lys Arg
245 250 255

Lys Ile Ile Ala Cys Ser Gly Gly Cys Glu Ala Leu Val Asp Thr Gly
260 265 270

Thr Ala Leu Ile Lys Gly Pro Arg Arg Leu Val Asn Asn Ile Gln Lys
275 280 285

Leu Ile Gly Thr Thr Pro Arg Gly Ser Lys His Tyr Val Ser Cys Ser
290 295 300

Val Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Ala Arg Ala Tyr Ile Leu Lys Asp Ser Glu Ser Asn
325 330 335

Cys Tyr Thr Thr Phe Lys Glu Asn Thr Val Arg Thr Ser Arg Glu Thr
340 345 350

Trp Ile Leu Gly Asp Val Phe Pro Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 49
<211> 1158
<212> DNA
<213> bovidae

<400> 49
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aatctaactt ttcacccctt gagaaacatc aaggataggc tctacgtggg taacatcacc 240
attggaacac cccctaaga attccaggtt atcttgaca caggctcatc tgacttgcgg 300
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<210> 50
<211> 381
<212> PRT
<213> bovidae

<400> 50
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Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Ile Leu Asn Asn Phe Leu Lys Glu His Ala Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Ser Cys Gly Ser Asn Leu Thr Phe His Pro Leu Arg
50 55 60

Asn Ile Lys Asp Arg Leu Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Thr Ser Val Phe Cys Thr Ser Pro Thr Cys Ser Thr His Val Met
100 105 110

Phe Arg His Phe Asp Ser Ser Thr Phe Arg Pro Thr Lys Lys Thr Phe
115 120 125

Ser Ile Asn Tyr Gly Ser Gly Arg Met Lys Gly Val Val Val His Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Val Val Glu Leu Gly Phe Asp Gly Ile Pro Phe Asp Gly Val Met
165 170 175

Gly Leu Asn Tyr Pro Lys Leu Ser Phe Ser Gly Ala Ile Pro Ile Phe
180 185 190

Asp Asn Leu Arg Asn Gln Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Glu Gln Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Leu Ile
225 230 235 240

Gln Ala Gly Asp Trp Ser Val His Met Asp Ser Ile Ser Met Lys Arg
245 250 255

Lys Val Ile Ala Cys Ser Gly Gly Cys Lys Ala Val Val Asp Thr Gly
260 265 270

Thr Ser Leu Ile Glu Gly Pro Arg Arg Leu Val Asn Asn Ile Gln Lys
275 280 285

Leu Ile Arg Ala Met Pro Arg Gly Ser Glu Tyr Tyr Val Ser Cys Ser
290 295 300

Ala Val Asn Thr Leu Pro Pro Ile Ile Phe Thr Ile Lys Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Ala Gln Ala Tyr Ile Leu Lys Asp Ser Arg Gly His
325 330 335

Cys Tyr Thr Thr Phe Lys Glu Asp Arg Leu Ser Pro Pro Ser Thr Glu
340 345 350

Thr Trp Ile Leu Gly Asp Val Phe Leu Arg Arg Tyr Phe Ser Val Phe
355 360 365

Asp Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

665 PEG 2260
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<211> 1154
<212> DNA
<213> bovidae

<400> 51
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atctaactag tcacccgctg agaaacatca aggatttggc ctacctggct aatatcacca 240
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tgcctctga ctttgcacc agcccaggct gttctaaaca cgtagattc agacatctc 360
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cacgggcagt gtaa 1154

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<211> 380
<212> PRT
<213> bovidae

<400> 52
Met Lys Trp Leu Val Val Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
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Ser Ser Asn Ile Gln Gly Pro Gly Arg Val Ile Asp Asn Ile His Lys
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Ala Val Ser Ala Leu Pro Ser Val Val Phe Thr Ile Asn Gly Ile Asn
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Cys Tyr Thr Ala Phe Lys Lys Gln Arg Phe Ser Ser Ser Thr Glu Thr
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SEQUENCE LISTING

<110> Roberts, R. Michael
Green, Jonathan
Xie, Sancei

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<211> 1311
<212> DNA
<213> bovidae

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<210> 10
<211> 1328
<212> DNA

<213> bovidae

<400> 10

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<210> 11

<211> 1285

<212> DNA

<213> bovidae

<400> 11

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<210> 12

<211> 1130

<212> DNA

<213> bovidae

<400> 12

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<210> 13

<211> 1173

<212> DNA

<213> bovidae

<400> 13

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<210> 14
<211> 1176
<212> DNA
<213> bovidae

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<210> 15
<211> 1360
<212> DNA
<213> Felis domestica

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<210> 16

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 16

cccaagctta tgaagtggct tgtgtccct

29

<210> 17

<211> 69

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 17

gggaagctta cttgtcatcg tcgtccttgc agtcggtaacc cacctgtgcc aggccaaatcc 60
tgtcatttc 69

<210> 18

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 18

cctctttgc cttctacttg a

21

<210> 19

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 19

gcgctcgagt tacactgccc gtgccaggc

29

<210> 20

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 20

tgggtaacat caccattgga a

21

<210> 21

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 21

tttctgagcc tgttttgcc

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<210> 22

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: PCR primer

<400> 22
tggtaacat caccattgga ac 22

<210> 23
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: PCR primer

<400> 23
caaacatcac cacactgccc tcc 23

<210> 24
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<212> PRT
<213> bovidae

<400> 24
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20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu His Ala Tyr Ser Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Thr His Pro Leu Arg
50 55 60

Asn Ile Lys Asp Leu Val Tyr Met Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Ala Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Asp Phe Cys Thr Ser Pro Ala Cys Ser Thr His Val Arg
100 105 110

Phe Arg His Leu Gln Ser Ser Thr Phe Arg Leu Thr Asn Lys Thr Phe
115 120 125

Arg Ile Thr Tyr Gly Ser Gly Arg Met Lys Gly Val Val Val His Asp
130 135 140

Thr Val Arg Ile Gly Asn Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Ile Glu Glu Tyr Gly Phe Glu Gly Arg Ile Tyr Asp Gly Val Leu
165 170 175

Gly Leu Asn Tyr Pro Asn Ile Ser Phe Ser Gly Ala Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Gln Arg Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Glu Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Glu Gly Glu Leu Asn Trp Val Pro Leu Ile
225 230 235 240

Gln Ala Gly Asp Trp Ser Val His Met Asp Arg Ile Ser Ile Glu Arg
245 250 255

Lys Ile Ile Ala Cys Ser Asp Gly Cys Lys Ala Leu Val Asp Thr Gly
260 265 270

Thr Ser Asp Ile Val Gly Pro Arg Arg Leu Val Asn Asn Ile His Arg
275 280 285

Leu Ile Gly Ala Ile Pro Arg Gly Ser Glu His Tyr Val Pro Cys Ser
290 295 300

Glu Val Asn Thr Leu Pro Ser Ile Val Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Gly Arg Ala Tyr Ile Leu Lys Asp Asp Arg Gly Arg
325 330 335

Cys Tyr Thr Thr Phe Gln Glu Asn Arg Val Ser Ser Ser Thr Glu Thr
340 345 350

Trp Tyr Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 25

<211> 376

<212> PRT

<213> bovidae

<400> 25

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile
1 5 10 15

Val Ile Leu Pro Leu Lys Lys Met Lys Thr Leu Arg Glu Thr Leu Arg
20 25 30

Glu Lys Asn Leu Leu Asn Asn Phe Leu Glu Glu Gln Ala Tyr Arg Leu
35 40 45

Ser Lys Asn Asp Ser Lys Ile Thr Ile His Pro Leu Arg Asn Tyr Leu
50 55 60

Asp Thr Ala Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro Pro Gln Glu
65 70 75 80

Phe Arg Val Val Phe Asp Thr Gly Ser Ala Asn Leu Trp Val Pro Cys
85 90 95

Ile Thr Cys Thr Ser Pro Ala Cys Tyr Thr His Lys Thr Phe Asn Pro
100 105 110

Gln Asn Ser Ser Ser Phe Arg Glu Val Gly Ser Pro Ile Thr Ile Phe
115 120 125

Tyr Gly Ser Gly Ile Ile Gln Gly Phe Leu Gly Ser Asp Thr Val Arg
130 135 140

Ile Gly Asn Leu Val Ser Pro Glu Gln Ser Phe Gly Leu Ser Leu Glu
145 150 155 160

Glu Tyr Gly Phe Asp Ser Leu Pro Phe Asp Gly Ile Leu Gly Leu Ala
165 170 175

Phe Pro Ala Met Gly Ile Glu Asp Thr Ile Pro Ile Phe Asp Asn Leu
180 185 190

Trp Ser His Gly Ala Phe Ser Glu Pro Val Phe Ala Phe Tyr Leu Asn
195 200 205

Thr Asn Lys Pro Glu Gly Ser Val Val Met Phe Gly Gly Val Asp His
210 215 220

Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Val Ser Gln Thr Ser
225 230 235 240

His Trp Gln Ile Ser Met Asn Asn Ile Ser Met Asn Gly Thr Val Thr
245 250 255

Ala Cys Ser Cys Gly Cys Glu Ala Leu Leu Asp Thr Gly Thr Ser Met
260 265 270

Ile Tyr Gly Pro Thr Lys Leu Val Thr Asn Ile His Lys Leu Met Asn
275 280 285

Ala Arg Leu Glu Asn Ser Glu Tyr Val Val Ser Cys Asp Ala Val Lys
290 295 300

Thr Leu Pro Pro Val Ile Phe Asn Ile Asn Gly Ile Asp Tyr Pro Leu
305 310 315 320

Arg Pro Gln Ala Tyr Ile Ile Lys Ile Gln Asn Ser Cys Arg Ser Val
325 330 335

Phe Gln Gly Gly Thr Glu Asn Ser Ser Leu Asn Thr Trp Ile Leu Gly
340 345 350

Asp Ile Phe Leu Arg Gln Tyr Phe Ser Val Phe Asp Arg Lys Asn Arg
355 360 365

Arg Ile Gly Leu Ala Pro Ala Val
370 375

<210> 26

<211> 381

<212> PRT

<213> bovidae

<400> 26

Met Asp Asp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Asn Thr Val Ser
20 25 30

Gly Lys Asn Ile Leu Asn Asn Ile Leu Lys Glu His Val Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Thr His Pro Leu Arg
50 55 60

Asn Ile Lys Asp Leu Ile Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro

65

70

75

80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Phe Trp
85 90 95

Val Pro Ser Asp Phe Cys Thr Ser Arg Ala Cys Ser Thr His Val Arg
100 105 110

Phe Arg His Leu Gln Ser Ser Thr Phe Arg Leu Thr Asn Lys Thr Phe
115 120 125

Arg Ile Thr Tyr Gly Ser Gly Arg Met Lys Gly Val Val Ala His Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Val Glu Glu Tyr Gly Phe Glu Gly Arg Ala Tyr Tyr Asp Gly Val
165 170 175

Leu Gly Leu Asn Tyr Pro Asn Ile Ser Phe Ser Gly Ala Ile Pro Ile
180 185 190

Phe Asp Asn Leu Lys Asn Gln Gly Ala Ile Ser Glu Pro Val Phe Ala
195 200 205

Ile Leu Leu Ser Lys Asp Glu Gln Glu Gly Ser Val Val Met Phe Gly
210 215 220

Gly Val Asp His Arg Tyr Tyr Glu Gly Glu Leu Asn Trp Val Pro Leu
225 230 235 240

Ile Glu Ala Gly Asp Trp Ile Ile His Met Asp Arg Ile Ser Met Lys
245 250 255

Arg Lys Ile Ile Ala Cys Ser Gly Ser Cys Glu Ala Ile Val Asp Thr
260 265 270

Gly Thr Ser Ala Ile Glu Gly Pro Arg Lys Leu Val Asn Lys Ile His
275 280 285

Lys Leu Ile Gly Ala Arg Pro Arg His Ser Lys Tyr Tyr Ile Ser Cys
290 295 300

Ser Ala Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile
305 310 315 320

Asn Tyr Pro Cys Pro Gly Arg Ala Tyr Val Leu Lys Asp Ser Arg Gly

325

330

335

Arg Cys Tyr Ser Met Phe Gln Glu Asn Lys Val Ser Ser Ser Thr Glu
340 345 350

Thr Trp Ile Leu Gly Asp Val Phe Leu Arg Val Tyr Phe Ser Val Phe
355 360 365

Asp Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 27

<211> 380

<212> PRT

<213> bovidae

<400> 27

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Thr Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Val Lys Glu His Ala Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Arg Asp Phe Phe Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Glu Leu Trp
85 90 95

Val Pro Ser Ile Phe Cys Asn Ser Ser Thr Cys Ser Lys His Asp Arg
100 105 110

Phe Arg His Leu Glu Ser Ser Thr Phe Arg Leu Ser Arg Arg Thr Phe
115 120 125

Ser Ile Thr Tyr Gly Ser Gly Arg Ile Glu Ala Leu Val Val His Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Gln Phe Gly Leu
145 150 155 160

Cys Leu Glu Glu Ser Gly Phe Glu Gly Met Arg Phe Asp Gly Val Leu
165 170 175

Gly Leu Ser Tyr Thr Asn Ile Ser Pro Ser Gly Ala Ile Pro Ile Phe
180 185 190

Tyr Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Glu Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Ala Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Leu Met
225 230 235 240

Lys Ala Gly Asp Trp Ser Val His Met Asp Arg Ile Ser Met Lys Arg
245 250 255

Lys Val Ile Ala Cys Ser Gly Gly Cys Lys Ala Leu Val Asp Thr Gly
260 265 270

Ser Ser Asp Ile Val Gly Pro Ser Thr Leu Val Asn Asn Ile Trp Lys
275 280 285

Leu Ile Gly Ala Thr Pro Gln Gly Ser Glu His Tyr Val Ser Cys Ser
290 295 300

Ala Val Asn Ser Leu Pro Ser Ile Ile Phe Thr Ile Lys Ser Asn Asn
305 310 315 320

Tyr Arg Val Pro Gly Gln Ala Tyr Ile Leu Lys Asp Ser Arg Gly Arg
325 330 335

Cys Phe Thr Ala Phe Lys Gly His Gln Gln Ser Ser Ser Thr Glu Met
340 345 350

Trp Ile Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Arg Lys Asp Arg Ile Gly Leu Ala Thr Lys Val
370 375 380

<210> 28
<211> 377
<212> PRT
<213> bovidae

<400> 28

Met Lys Trp Leu Val Leu Leu Gly Leu Leu Thr Ser Ser Glu Cys Ile
1 5 10 15

Val Ile Leu Pro Leu Thr Lys Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Glu Lys Asn Met Leu Asn Asn Phe Leu Lys Glu Gln Ala Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Ser Arg Gly Ser Asn Ile Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Met Asp Met Val Tyr Val Gly Lys Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Glu Leu Trp
85 90 95

Val Pro Ser Val Phe Cys Pro Ser Ser Ala Cys Ser Thr His Ile Arg
100 105 110

Phe Arg His Leu Glu Ser Ser Thr Ser Gly Leu Thr Gln Lys Thr Phe
115 120 125

Ser Ile Thr Tyr Gly Ser Gly Ser Thr Lys Gly Phe Leu Ala Tyr Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Leu Ser Thr Asp Gln Glu Phe Gly Leu
145 150 155 160

Ser Met Glu Glu His Gly Phe Glu Asp Leu Pro Phe Asp Gly Val Leu
165 170 175

Gly Leu Asn Tyr Pro Asp Met Ser Phe Ile Thr Thr Ile Pro Ile Phe
180 185 190

Asp Asn Leu Lys Asn Gln Gly Ala Phe Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Gly Lys Val Lys Gly Ser Val Val Met Phe Gly Gly Val Asp
210 215 220

His Thr Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile Gln Ala
225 230 235 240

Gly Glu Trp Ser Leu His Met Asp Arg Ile Ser Met Lys Arg Lys Val
245 250 255

Ile Ala Cys Ser Gly Gly Cys Glu Ala Phe Tyr Asp Thr Gly Thr Ser
260 265 270

Leu Ile Leu Gly Pro Arg Arg Leu Val Asn Asn Ile Gln Lys Leu Ile
275 280 285

Gly Ala Thr Pro Gln Gly Ser Glu His Tyr Ile Ser Cys Phe Ala Val
290 295 300

Ile Ser Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile Asn Ile Pro
305 310 315 320

Val Pro Ala Arg Ala Tyr Ile His Lys Asp Ser Arg Gly His Cys Tyr
325 330 335

Pro Thr Phe Lys Glu Asn Thr Val Ser Thr Ser Thr Glu Thr Trp Ile
340 345 350

Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp Arg Gly
355 360 365

Asn Asp Arg Ile Gly Leu Ala Gln Val
370 375

<210> 29

<211> 379

<212> PRT

<213> bovidae

<400> 29

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Asn Ala Ile Ser
20 25 30

Gly Lys Asn Thr Leu Asn Asn Ile Leu Lys Glu His Ala Tyr Arg Leu
35 40 45

Pro Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr His Pro Leu Arg Asn
50 55 60

Ile Arg Asp Leu Phe Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro Pro
65 70 75 80

Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Asp Leu Trp Val

85

90

95

Ala Ser Ile Phe Cys Asn Ser Ser Ser Cys Ala Ala His Val Arg Phe
100 105 110

Arg His His Gln Ser Ser Thr Phe Arg Pro Thr Asn Lys Thr Phe Arg
115 120 125

Ile Thr Tyr Gly Ser Gly Arg Met Lys Gly Val Val Val His Asp Thr
130 135 140

Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu Cys
145 150 155 160

Leu Lys Asp Ser Gly Phe Lys Gly Ile Pro Phe Asp Gly Ile Leu Gly
165 170 175

Leu Ser Tyr Pro Asn Lys Thr Phe Ser Gly Ala Phe Pro Ile Phe Asp
180 185 190

Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe Tyr
195 200 205

Leu Ser Lys Asp Lys Gln Glu Gly Ser Val Val Met Phe Gly Gly Val
210 215 220

Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile Gln
225 230 235 240

Val Gly Asp Trp Phe Val His Met Asp Arg Thr Thr Met Lys Arg Lys
245 250 255

Val Ile Ala Cys Ser Asp Gly Cys Lys Ala Leu Val Asp Thr Gly Thr
260 265 270

Ser Asp Ile Val Gly Pro Ser Thr Leu Val Asn Asn Ile Trp Lys Leu
275 280 285

Ile Arg Ala Arg Pro Leu Gly Pro Gln Tyr Phe Val Ser Cys Ser Ala
290 295 300

Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile Asn Tyr
305 310 315 320

Arg Leu Pro Ala Arg Ala Tyr Ile His Lys Asp Ser Arg Gly Arg Cys
325 330 335

Tyr Thr Ala Phe Lys Glu His Arg Phe Ser Ser Pro Ile Glu Thr Trp

340

345

350

Leu Leu Gly Asp Val Phe Leu Arg Arg Tyr Phe Ser Val Phe Asp Arg
355 360 365

Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375

<210> 30
<211> 341
<212> PRT
<213> bovidae

<400> 30

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu Asp Pro Tyr Arg Leu
35 40 45

Ser His Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Arg Asp Ile Phe Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Ile Asp Cys Asn Ser Thr Ser Cys Ala Thr His Val Arg
100 105 110

Phe Arg His Leu Gln Ser Ser Thr Phe Arg Pro Thr Asn Lys Thr Phe
115 120 125

Arg Ile Ile Tyr Gly Ser Gly Arg Met Asn Gly Val Ile Ala Tyr Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Val Glu Glu Tyr Gly Phe Ala His Lys Arg Phe Asp Gly Ile Leu
165 170 175

Gly Leu Asn Tyr Trp Asn Leu Ser Trp Ser Lys Ala Met Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Asn Ile Thr Met Asn Arg Glu Val Ile Ala Cys Ser Glu
210 215 220

Gly Cys Ala Ala Leu Val Asp Thr Gly Ser Ser Asn Ile Gln Gly Pro
225 230 235 240

Gly Arg Leu Ile Asp Asn Ile Gln Arg Ile Ile Gly Ala Thr Pro Arg
245 250 255

Gly Ser Lys Tyr Tyr Val Ser Cys Ser Ala Val Asn Ile Leu Pro Ser
260 265 270

Ile Ile Phe Thr Ile Asn Gly Val Asn Tyr Pro Val Pro Pro Arg Ala
275 280 285

Tyr Ile Leu Lys Asp Ser Arg Gly His Cys Tyr Thr Phe Lys Glu
290 295 300

Lys Arg Val Arg Arg Ser Thr Glu Ser Trp Val Leu Gly Glu Val Phe
305 310 315 320

Leu Arg Leu Tyr Phe Ser Val Phe Asp Arg Gly Asn Asp Arg Ile Gly
325 330 335

Leu Ala Arg Arg Val
340

<210> 31

<211> 387

<212> PRT

<213> bovidae

<400> 31

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Thr Lys Met Lys Thr Met Gln Glu Ala Ile Arg
20 25 30

Glu Lys Gln Leu Leu Glu Asp Phe Leu Asp Glu Gln Pro His Ser Leu
35 40 45

Ser Gln His Ser Asp Pro Asp Lys Lys Phe Ser Ser His Gln Leu Lys
50 55 60

Asn Phe Gln Asn Ala Val Tyr Phe Gly Thr Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Asn Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Val Asp Cys Gln Ser Pro Ser Cys Ser Lys His Lys Arg
100 105 110

Phe Asp Pro Gln Lys Ser Thr Thr Phe Gln Pro Leu Asn Gln Lys Ile
115 120 125

Glu Leu Val Tyr Gly Ser Gly Thr Met Lys Gly Val Leu Gly Ser Asp
130 135 140

Thr Ile Gln Ile Gly Asn Leu Val Ile Val Asn Gln Ile Phe Gly Leu
145 150 155 160

Ser Gln Asn Gln Ser Ser Gly Val Leu Glu Gln Val Pro Tyr Asp Gly
165 170 175

Ile Leu Gly Leu Ala Tyr Pro Ser Leu Ala Ile Gln Gly Thr Thr Pro
180 185 190

Val Phe Asp Asn Leu Lys Asn Arg Glu Val Ile Ser Glu Pro Val Phe
195 200 205

Ala Phe Tyr Leu Ser Ser Arg Pro Glu Asn Ile Ser Thr Val Met Phe
210 215 220

Gly Gly Val Asp His Thr Tyr His Lys Gly Lys Leu Gln Trp Ile Pro
225 230 235 240

Val Thr Gln Ala Arg Phe Trp Gln Val Ala Met Ser Ser Met Thr Met
245 250 255

Asn Gly Asn Val Val Gly Cys Ser Gln Gly Cys Gln Ala Val Val Asp
260 265 270

Thr Gly Thr Ser Leu Leu Val Gly Pro Thr His Leu Val Thr Asp Ile
275 280 285

Leu Lys Leu Ile Asn Pro Asn Pro Ile Leu Asn Asp Glu Gln Met Leu
290 295 300

Ser Cys Asp Ala Ile Asn Ser Leu Pro Thr Leu Leu Leu Thr Ile Asn
305 310 315 320

Gly Ile Val Tyr Pro Val Pro Pro Asp Tyr Tyr Ile Gln Arg Phe Ser
325 330 335

Glu Arg Ile Cys Phe Ile Ser Phe Gln Gly Gly Thr Glu Ile Leu Lys
340 345 350

Asn Leu Gly Thr Ser Glu Thr Trp Ile Leu Gly Asp Val Phe Leu Arg
355 360 365

Leu Tyr Phe Ser Val Tyr Asp Arg Gly Asn Asn Arg Ile Gly Leu Ala
370 375 380

Pro Ala Ala

385

<210> 32

<211> 379

<212> PRT

<213> bovidae

<400> 32

Met Lys Trp Ile Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Gln Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Lys Asn Phe Leu Lys Glu His Pro Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Met Asn Leu Val Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Phe Cys Thr Met Pro Ala Cys Ser Ala Pro Val Trp Phe
100 105 110

Arg Gln Leu Gln Ser Ser Thr Phe Gln Pro Thr Asn Lys Thr Phe Thr

115

120

125

Ile Thr Tyr Gly Ser Gly Ser Met Lys Gly Phe Leu Ala Tyr Asp Thr
130 135 140

Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu Ser
145 150 155 160

Val Val Glu Tyr Gly Leu Glu Gly Arg Asn Tyr Asp Gly Val Leu Gly
165 170 175

Leu Asn Tyr Pro Asn Ile Ser Phe Ser Gly Ala Ile Pro Ile Phe Asp
180 185 190

Asn Leu Lys Asn Gln Gly Ala Ile Ser Glu Pro Val Phe Ala Phe Tyr
195 200 205

Leu Ser Lys Asn Lys Gln Glu Gly Ser Val Val Met Phe Gly Gly Val
210 215 220

Asp His Gln Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Leu Ile Glu
225 230 235 240

Ala Gly Glu Trp Arg Val His Met Asp Arg Ile Ser Met Lys Arg Thr
245 250 255

Val Ile Ala Cys Ser Asp Gly Cys Glu Ala Leu Val His Thr Gly Thr
260 265 270

Ser His Ile Glu Gly Pro Gly Arg Leu Val Asn Asn Ile His Arg Leu
275 280 285

Ile Arg Thr Arg Pro Phe Asp Ser Lys His Tyr Val Ser Cys Phe Ala
290 295 300

Thr Lys Tyr Leu Pro Ser Ile Thr Phe Ile Ile Asn Gly Ile Lys Tyr
305 310 315 320

Pro Met Thr Ala Arg Ala Tyr Ile Phe Lys Asp Ser Arg Gly Arg Cys
325 330 335

Tyr Ser Ala Phe Lys Glu Asn Thr Val Arg Thr Ser Arg Glu Thr Trp
340 345 350

Ile Leu Gly Asp Ala Phe Leu Arg Arg Tyr Phe Ser Val Phe Asp Arg
355 360 365

Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val

<210> 33
 <211> 380
 <212> PRT
 <213> bovidae

<400> 33
 Met Lys Trp Leu Gly Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Met
 1 5 10 15

Val Ile Ile Pro Leu Arg Gln Met Lys Thr Met Arg Glu Thr Leu Arg
 20 25 30

Glu Arg His Leu Leu Thr Asn Phe Ser Glu Glu His Pro Tyr Asn Leu
 35 40 45

Ser Gln Lys Ala Ala Asn Asp Gln Asn Ile Ile Tyr His His Pro Leu
 50 55 60

Arg Ser Tyr Lys Asp Phe Ser Tyr Ile Gly Asn Ile Asn Ile Gly Thr
 65 70 75 80

Pro Pro Gln Glu Phe Gln Val Leu Phe Asp Thr Gly Ser Ser Leu
 85 90 95

Trp Val Pro Ser Ile Tyr Cys Gln Ser Ser Ser Cys Tyr Lys His Asn
 100 105 110

Ser Phe Val Pro Cys Asn Ser Ser Thr Phe Lys Ala Thr Asn Lys Ile
 115 120 125

Phe Asn Thr Asn Tyr Thr Ala Thr Ser Ile Lys Gly Tyr Leu Val Tyr
 130 135 140

Asp Thr Val Arg Ile Gly Asn Leu Val Ser Val Ala Gln Pro Phe Gly
 145 150 155 160

Leu Ser Leu Lys Glu Phe Gly Phe Asp Asp Val Pro Phe Asp Gly Ile
 165 170 175

Leu Gly Leu Gly Tyr Pro Arg Arg Thr Ile Thr Gly Ala Asn Pro Ile
 180 185 190

Phe Asp Asn Leu Trp Lys Gln Gly Val Ile Ser Glu Pro Val Phe Ala
 195 200 205

Phe Tyr Leu Ser Ser Gln Lys Glu Asn Gly Ser Val Val Met Phe Gly
210 215 220

Gly Val Asn Arg Ala Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Val
225 230 235 240

Ser Gln Val Gly Ser Trp His Ile Asn Ile Asp Ser Ile Ser Met Asn
245 250 255

Gly Thr Val Val Ala Cys Lys Arg Gly Cys Gln Ala Ser Trp Ile Arg
260 265 270

Gly Arg Leu Ser Ala Trp Pro Lys Arg Ile Val Ser Lys Ile Gln Lys
275 280 285

Leu Ile His Ala Arg Pro Ile Asp Arg Glu His Val Val Ser Cys Gln
290 295 300

Ala Ile Gly Thr Leu Pro Pro Ala Val Phe Thr Ile Asn Gly Ile Asp
305 310 315 320

Tyr Pro Val Pro Ala Gln Ala Tyr Ile Gln Ser Leu Ser Gly Tyr Cys
325 330 335

Phe Ser Asn Phe Leu Val Arg Pro Gln Arg Val Asn Glu Ser Glu Thr
340 345 350

Trp Ile Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asn Arg Ile Gly Leu Ala Pro Ala Val
370 375 380

<210> 34

<211> 376

<212> PRT

<213> bovidae

<400> 34

Met Lys Trp Leu Val Phe Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Ile Met Leu Leu Thr Lys Thr Lys Thr Met Arg Glu Ile Trp Arg
20 25 30

Glu Lys Lys Leu Leu Asn Ser Phe Leu Glu Glu Gln Ala Asn Arg Met
35 40 45

Ser Asp Asp Ser Ala Ser Asp Pro Lys Leu Ser Thr His Pro Leu Arg
50 55 60

Asn Ala Leu Asp Met Ala Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Lys Glu Phe Arg Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Ile Lys Cys Ile Ser Pro Ala Cys His Thr His Ile Thr
100 105 110

Phe Asp His His Lys Ser Ser Thr Phe Arg Leu Thr Arg Arg Pro Phe
115 120 125

His Ile Leu Tyr Gly Ser Gly Met Met Asn Gly Val Leu Ala Tyr Asp
130 135 140

Thr Val Arg Ile Gly Lys Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Leu Gln Gln Phe Gly Phe Asp Asn Ala Pro Phe Asp Gly Val Leu
165 170 175

Gly Leu Ser Tyr Pro Ser Leu Ala Val Pro Gly Thr Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Gln Gln Gly Ala Ile Ser Glu Pro Ile Phe Ala Phe
195 200 205

Tyr Leu Ser Thr Arg Lys Glu Asn Gly Ser Val Leu Met Leu Gly Gly
210 215 220

Val Asp His Ser Tyr His Lys Gly Lys Leu Asn Trp Ile Pro Val Ser
225 230 235 240

Gln Thr Lys Ser Trp Leu Ile Thr Val Asp Arg Ile Ser Met Asn Gly
245 250 255

Arg Val Ile Gly Cys Glu His Gly Cys Glu Ala Leu Val Asp Thr Gly
260 265 270

Thr Ser Leu Ile His Gly Pro Ala Arg Pro Val Thr Asn Ile Gln Lys
275 280 285

Phe Ile His Ala Met Pro Tyr Gly Ser Glu Tyr Met Val Leu Cys Pro
290 295 300

Val Ile Ser Ile Leu Pro Pro Val Ile Phe Thr Ile Asn Gly Ile Asp
305 310 315 320

Tyr Ser Val Pro Arg Glu Ala Tyr Ile Gln Lys Ile Ser Asn Ser Leu
325 330 335

Cys Leu Ser Thr Phe His Gly Asp Asp Thr Asp Gln Trp Ile Leu Gly
340 345 350

Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Tyr Asp Arg Gly Asn Asn
355 360 365

Arg Ile Gly Leu Ala Pro Ala Val
370 375

<210> 35

<211> 375

<212> PRT

<213> bovidae

<400> 35

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile
1 5 10 15

Val Ile Leu Pro Leu Arg Lys Met Lys Thr Leu Arg Glu Thr Leu Arg
20 25 30

Glu Lys Asn Leu Leu Asn Asn Phe Leu Glu Glu Arg Ala Tyr Arg Leu
35 40 45

Ser Lys Lys Asp Ser Lys Ile Thr Ile His Pro Leu Lys Asn Tyr Leu
50 55 60

Asp Met Ala Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro Pro Gln Glu
65 70 75 80

Phe Arg Val Val Phe Asp Thr Gly Ser Ala Asp Leu Trp Val Pro Ser
85 90 95

Ile Ser Cys Val Ser Pro Ala Cys Tyr Thr His Lys Thr Phe Asn Leu
100 105 110

His Asn Ser Ser Ser Phe Gly Gln Thr His Gln Pro Ile Ser Ile Ser
115 120 125

Tyr Gly Pro Gly Ile Ile Gln Gly Phe Leu Gly Ser Asp Thr Val Arg

130

135

140

Ile Gly Asn Leu Val Ser Leu Lys Gln Ser Phe Gly Leu Ser Gln Glu
145 150 155 160

Glu Tyr Gly Phe Asp Gly Ala Pro Phe Asp Gly Val Leu Gly Leu Ala
165 170 175

Tyr Pro Ser Ile Ser Ile Lys Gly Ile Ile Pro Ile Phe Asp Asn Leu
180 185 190

Trp Ser Gln Gly Ala Phe Ser Glu Pro Val Phe Ala Phe Tyr Leu Asn
195 200 205

Thr Cys Gln Pro Glu Gly Ser Val Val Met Phe Gly Gly Val Asp His
210 215 220

Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Val Ser Gln Thr Arg
225 230 235 240

Tyr Trp Gln Ile Ser Met Asn Arg Ile Ser Met Asn Gly Asn Val Thr
245 250 255

Ala Cys Ser Arg Gly Cys Gln Ala Leu Leu Asp Thr Gly Thr Ser Met
260 265 270

Ile His Gly Pro Thr Arg Leu Ile Thr Asn Ile His Lys Leu Met Asn
275 280 285

Ala Arg His Gln Gly Ser Glu Tyr Val Val Ser Cys Asp Ala Val Lys
290 295 300

Thr Leu Pro Pro Val Ile Phe Asn Ile Asn Gly Ile Asp Tyr Pro Leu
305 310 315 320

Pro Pro Gln Ala Tyr Ile Thr Lys Ala Gln Asn Phe Cys Leu Ser Ile
325 330 335

Phe His Gly Gly Thr Glu Thr Ser Ser Pro Glu Thr Trp Ile Leu Gly
340 345 350

Gly Val Phe Leu Arg Gln Tyr Phe Ser Val Phe Asp Arg Arg Asn Asp
355 360 365

Ser Ile Gly Leu Ala Gln Val
370 375

<210> 36
<211> 391
<212> PRT
<213> bovidae

<400> 36
Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Leu Ser Glu Cys Ile
1 5 10 15

Val Ile Leu Pro Leu Lys Lys Met Lys Thr Leu Arg Glu Thr Leu Arg
20 25 30

Glu Lys Asn Leu Leu Asn Asn Phe Leu Glu Glu Gln Ala Tyr Arg Leu
35 40 45

Ser Lys Asn Asp Ser Lys Ile Thr Ile His Pro Leu Arg Asn Tyr Leu
50 55 60

Asp Thr Ala Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro Pro Gln Glu
65 70 75 80

Phe Arg Val Val Phe Asp Thr Gly Ser Ala Asn Leu Trp Val Pro Cys
85 90 95

Ile Thr Cys Thr Ser Pro Ala Cys Tyr Thr His Lys Thr Phe Asn Pro
100 105 110

Gln Asn Ser Ser Ser Phe Arg Glu Val Gly Ser Pro Ile Thr Ile Phe
115 120 125

Tyr Gly Ser Gly Ile Ile Gln Gly Phe Leu Gly Ser Asp Thr Val Arg
130 135 140

Ile Gly Asn Leu Val Ser Leu Lys Gln Ser Phe Gly Leu Ser Gln Glu
145 150 155 160

Glu Tyr Gly Phe Asp Gly Ala Pro Phe Asp Gly Val Leu Gly Leu Ala
165 170 175

Tyr Pro Ser Ile Ser Ile Lys Gly Ile Ile Pro Ile Phe Asp Asn Leu
180 185 190

Trp Ser His Gly Ala Phe Ser Glu Pro Val Phe Ala Phe Tyr Leu Asn
195 200 205

Thr Asn Lys Pro Glu Gly Ser Val Val Met Phe Gly Gly Val Asp His
210 215 220

Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Val Ser Gln Thr Ser
225 230 235 240

His Trp Gln Ile Ser Met Asn Asn Ile Ser Met Asn Gly Thr Val Thr
245 250 255

Ala Cys Ser Cys Gly Cys Glu Ala Leu Leu Asp Thr Gly Thr Ser Met
260 265 270

Ile Tyr Gly Pro Thr Lys Leu Val Thr Asn Ile His Lys Leu Met Asn
275 280 285

Ala Arg Leu Glu Asn Ser Glu Tyr Val Val Ser Cys Asp Ala Val Lys
290 295 300

Thr Leu Pro Pro Val Ile Phe Asn Ile Asn Gly Ile Asp Tyr Pro Leu
305 310 315 320

Arg Pro Gln Ala Tyr Ile Ile Lys Ile Gln Asn Asn Cys Arg Ser Val
325 330 335

Phe Gln Gly Gly Thr Glu Asn Ser Ser Leu Asn Thr Trp Ile Leu Gly
340 345 350

Asp Ile Phe Leu Arg Gln Tyr Phe Ser Val Phe Asp Arg Lys Asn Arg
355 360 365

Arg Ile Cys Trp His Arg Trp Val Pro Thr Thr Arg Thr Thr Met Thr
370 375 380

Ser Lys Leu Pro Pro Lys Leu
385 390

<210> 37

<211> 392

<212> PRT

<213> bovidae

<400> 37

Met Lys Trp Leu Val Leu Leu Ala Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Ile Lys Ile Pro Leu Arg Arg Val Lys Thr Met Ser Asn Thr Ala Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Lys His Pro Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Thr His Pro Leu Met
50 55 60

Asn Ile Trp Asp Leu Leu Tyr Leu Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Leu Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Leu Leu Cys Asn Ser Ser Thr Cys Ala Lys His Val Met
100 105 110

Phe Arg His Arg Leu Ser Ser Thr Tyr Arg Pro Thr Asn Lys Thr Phe
115 120 125

Met Ile Phe Tyr Ala Val Gly Lys Ile Glu Gly Val Val Val Arg Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Ala Asp Gln Thr Phe Gly Leu
145 150 155 160

Ser Ile Ala Glu Thr Gly Phe Glu Asn Thr Thr Leu Asp Gly Ile Leu
165 170 175

Gly Leu Ser Tyr Pro Asn Thr Ser Cys Phe Gly Thr Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Leu His Ser
195 200 205

Val Arg Arg Lys Asp Glu Gln Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Ser Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile
225 230 235 240

Lys Ala Gly Asp Trp Ser Val Arg Val Asp Ser Ile Thr Met Lys Arg
245 250 255

Glu Val Ile Ala Cys Ser Asp Gly Cys Arg Ala Leu Val Asp Thr Gly
260 265 270

Ser Ser His Ile Gln Gly Pro Gly Arg Leu Ile Asp Asn Val Gln Lys
275 280 285

Leu Ile Gly Thr Met Pro Gln Gly Ser Met His Tyr Val Pro Cys Ser
290 295 300

Ala Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Ser Ile Ser
305 310 315 320

Tyr Thr Val Pro Ala Gln Ala Tyr Ile Leu Lys Gly Ser Arg Gly Arg
325 330 335

Cys Tyr Ser Thr Phe Gln Gly His Thr Met Ser Ser Ser Thr Glu Thr
340 345 350

Trp Ile Leu Gly Asp Val Phe Leu Ser Gln Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Gln Val Gly Thr Asp Tyr Lys
370 375 380

Asp Asp Asp Glu Ser Pro Lys Leu
385 390

<210> 38
<211> 388
<212> PRT
<213> Felis domestica

<400> 38
Met Lys Trp Leu Trp Val Leu Gly Leu Val Ala Leu Ser Glu Cys Leu
1 5 10 15

Val Thr Ile Pro Leu Thr Arg Val Lys Ser Met Arg Glu Asn Leu Arg
20 25 30

Glu Lys Asp Arg Leu Lys Asp Phe Leu Glu Asn His Pro Tyr Asn Leu
35 40 45

Ala Tyr Lys Phe Val Asp Ser Val Asn Leu Asp Leu Gly Ile Tyr Phe
50 55 60

Glu Pro Met Arg Asn Tyr Leu Asp Leu Ala Tyr Val Gly Thr Ile Ser
65 70 75 80

Ile Gly Thr Pro Pro Gln Glu Phe Lys Val Ile Phe Asp Thr Gly Ser
85 90 95

Ser Asp Leu Trp Val Pro Ser Ile Tyr Cys Ser Ser Pro Ala Cys Ala
100 105 110

Asn His Asn Val Phe Asn Pro Leu Arg Ser Ser Thr Phe Arg Ile Ser

115 120 125
Gly Arg Pro Ile His Leu Gln Tyr Gly Ser Gly Thr Met Ser Gly Phe
130 135 140

Leu Ala Tyr Asp Thr Val Arg Phe Gly Gly Leu Val Asp Val Ala Gln
145 150 155 160

Ala Phe Gly Leu Ser Leu Arg Glu Pro Gly Lys Phe Met Glu Tyr Ala
165 170 175

Val Phe Asp Gly Ile Leu Gly Leu Ala Tyr Pro Ser Leu Ser Leu Arg
180 185 190

Gly Thr Val Pro Val Phe Asp Asn Leu Trp Lys Gln Gly Leu Ile Ser
195 200 205

Gln Glu Leu Phe Ala Phe Tyr Leu Ser Lys Lys Asp Glu Glu Gly Ser
210 215 220

Val Val Met Phe Gly Gly Val Asp His Ser Tyr Tyr Ser Gly Asp Leu
225 230 235 240

Asn Trp Val Pro Val Ser Lys Arg Leu Tyr Trp Gln Leu Ser Met Asp
245 250 255

Ser Ile Ser Met Asn Gly Glu Val Ile Ala Cys Asp Gly Gly Cys Gln
260 265 270

Ala Ile Ile Asp Thr Gly Thr Ser Leu Leu Ile Gly Pro Ser His Val
275 280 285

Val Phe Asn Ile Gln Met Ile Ile Gly Ala Asn Gln Ser Tyr Ser Gly
290 295 300

Glu Tyr Val Val Asp Cys Asp Ala Ala Asn Thr Leu Pro Asp Ile Val
305 310 315 320

Phe Thr Ile Asn Gly Ile Asp Tyr Pro Val Pro Ala Ser Ala Tyr Ile
325 330 335

Gln Glu Gly Pro Gln Gly Thr Cys Tyr Ser Gly Phe Asp Glu Ser Gly
340 345 350

Asp Ser Leu Leu Val Ser Asp Ser Trp Ile Leu Gly Asp Val Phe Leu
355 360 365

Arg Leu Tyr Phe Thr Val Phe Asp Arg Glu Asn Asn Arg Ile Gly Leu

370

375

380

Ala Leu Ala Val
385

<210> 39
<211> 1158
<212> DNA
<213> bovidae

<400> 39
aggaaagaag catgaagtgg cttgtggtcc tcgggctggt ggccttctca gagtgcata 60
tcaaaatacc tctaaggaga gtgaagacca tgagaaaaac tctcaagtggaa aaaaacatgc 120
tgaacaattt cttgaaggag gatccttaca gactgtccca gatttcttt cgtggctcaa 180
atctaactat tcacccgctg agaaacatca gagatatctt ctatgtcgga aacatcacca 240
ttgaaacacc ccctcaggaa ttccaggtta tcttgacac aggctcatct gacttgtggg 300
tgcctcgat cgattgcaac agtacatcct gtgctacaca tggtaggttc agacatcttc 360
agtcttccac cttccggcct accaataaga ctttcaggat catctatggaa tctgggagaa 420
tgaacggagt tattgcttac gacacagttc ggattggggaa cttgttaagt accgaccagc 480
catttggct aagcgtggag gaatatgggt ttgcgcacaa aagatttgat ggcacatcttgg 540
gcttgaacta ctggAACCTA tcctggtcta aggccatgccc catcttgac aagctgaaga 600
atgaaggcgc catttctgag cctgttttgc ctttctactt gagcaaagac aagcggggagg 660
gcagtgtgggt gatgtttgggt ggggtggacc accgctacta caagggagag ctcaagtggg 720
taccactgat ccaagcagtc gactggagtg tacacgtaga ccgcacatcacc atgaacagag 780
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ccaaagtacta cgttcatgt tctgcggtca atatcctgccc ctctattatc ttcaccatca 960
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cacggggcagt gtaactcg 1158

<210> 40
<211> 380
<212> PRT
<213> bovidae

<400> 40
Met Lys Trp Leu Val Val Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu Asp Pro Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Arg Asp Ile Phe Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Ile Asp Cys Asn Ser Thr Ser Cys Ala Thr His Val Arg
100 105 110

Phe Arg His Leu Gln Ser Ser Thr Phe Arg Pro Thr Asn Lys Thr Phe
115 120 125

Arg Ile Ile Tyr Gly Ser Gly Arg Met Asn Gly Val Ile Ala Tyr Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Val Glu Glu Tyr Gly Phe Ala His Lys Arg Phe Asp Gly Ile Leu
165 170 175

Gly Leu Asn Tyr Trp Asn Leu Ser Trp Ser Lys Ala Met Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Lys Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Glu Leu Lys Trp Val Pro Leu Ile
225 230 235 240

Gln Ala Val Asp Trp Ser Val His Val Asp Arg Ile Thr Met Asn Arg
245 250 255

Glu Val Ile Ala Cys Ser Glu Gly Cys Ala Ala Leu Val Asp Thr Gly
260 265 270

Ser Ser Asn Ile Gln Gly Pro Arg Arg Leu Ile Asp Asn Ile Gln Arg
275 280 285

Ile Ile Gly Ala Thr Pro Arg Gly Ser Lys Tyr Tyr Val Ser Cys Ser
290 295 300

Ala Val Asn Ile Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Val Asn
305 310 315 320

Tyr Pro Val Pro Pro Arg Ala Tyr Ile Leu Lys Asp Ser Arg Gly His
325 330 335

Cys Tyr Thr Thr Phe Lys Glu Lys Arg Val Arg Arg Ser Thr Glu Ser
340 345 350

Trp Val Leu Gly Glu Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 41

<211> 1155

<212> DNA

<213> bovidae

<400> 41

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tgaagaattt cttgaaggag catccttaca gactgtccca gatttctttt cgtggctcaa 180
atctaactat tcacccgctg aggaacatca tgaatttgggt ctacgtgggt aacatcacca 240
ttggaacacc ccctcaggaa ttccagggtt tctttgacac aggctcatct gacttgggg 300
tgccctcctt ttgtaccatg ccagcatgct ctgcacccgt ttggttcaga caacttcagt 360
cttccaccc ttccatcacc aataagacct tcaccatcac ctatggatct gggagcatga 420
agggatttct tgcttatgac acagttcgga ttggggacct tgtaagtact gatcagccgt 480
tcggctcaag cgtggtgaa tatgggttgg agggcagaaa ttatgatggt gccttgggct 540
tgaactaccc caacatatcc ttctctggag ccattcccat ctttgacaac ctgaagaatc 600
aaggtgcat ttctgagcct gttttgcct tctacttgag caaaaacaag caggagggca 660
gtgtggtgat gttttgggg gtggaccacc agtactacaa gggagagctc aactggatac 720
caactgattga agcaggcgaa tggagagtac acatggaccc catctccatg aaaagaacgg 780
ttattgctt ttctgatggc tggaggccc ttgtgcacac tgggacatca catatcgaag 840
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agcactacgt ttcatgtttt gccaccaata ccctgccttc tattacttac atcatcaacg 960
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ccttcctgag gcggtatttc tcagtcttg atcgaggaaa tgacaggatt ggcctggcac 1140
ggcagtgtactcg 1155

<210> 42

<211> 379

<212> PRT

<213> bovidae

<400> 42

Met Lys Trp Ile Val Leu Leu Gly Leu Met Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Gln Ile Pro Leu Arg Gln Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Lys Asn Phe Leu Lys Glu His Pro Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Met Asn Leu Val Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Phe Cys Thr Met Pro Ala Cys Ser Ala Pro Val Trp Phe
100 105 110

Arg Gln Leu Gln Ser Ser Thr Phe Gln Pro Thr Asn Lys Thr Phe Thr
115 120 125

Ile Thr Tyr Gly Ser Gly Ser Met Lys Gly Phe Leu Ala Tyr Asp Thr
130 135 140

Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu Ser
145 150 155 160

Val Val Glu Tyr Gly Leu Glu Gly Arg Asn Tyr Asp Gly Ala Leu Gly
165 170 175

Leu Asn Tyr Pro Asn Ile Ser Phe Ser Gly Ala Ile Pro Ile Phe Asp
180 185 190

Asn Leu Lys Asn Gln Gly Ala Ile Ser Glu Pro Val Phe Ala Phe Tyr
195 200 205

Leu Ser Lys Asn Lys Gln Glu Gly Ser Val Val Met Phe Gly Gly Val
210 215 220

Asp His Gln Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Leu Ile Glu
225 230 235 240

Ala Gly Glu Trp Arg Val His Met Asp Arg Ile Ser Met Lys Arg Thr
245 250 255

Val Ile Ala Cys Ser Asp Gly Cys Glu Ala Leu Val His Thr Gly Thr
260 265 270

Ser His Ile Glu Gly Pro Gly Arg Leu Val Asn Asn Ile His Arg Leu
275 280 285

Ile Arg Thr Arg Pro Phe Asp Ser Lys His Tyr Val Ser Cys Phe Ala
290 295 300

Thr Asn Thr Leu Pro Ser Ile Thr Phe Ile Ile Asn Gly Ile Lys Tyr
305 310 315 320

Pro Met Thr Ala Arg Ala Tyr Ile Phe Lys Asp Ser Arg Gly Arg Cys
325 330 335

Tyr Ser Ala Phe Lys Glu Asn Thr Val Arg Thr Ser Arg Glu Thr Trp
340 345 350

Ile Leu Gly Asp Ala Phe Leu Arg Arg Tyr Phe Ser Val Phe Asp Arg
355 360 365

Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375

<210> 43

<211> 1154

<212> DNA

<213> bovidae

<400> 43

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tgaacaattt cctgaaggag catgcttaca gactgtccca gatttctttt catggctcaa 180
atctaactat tcacccgctg agaaacatca gggatttgtt ctacatgggt aacatcacca 240
ttggaacacc ccctcaggaa ttccctggttg tctttgacac aggctcatct gacttgtggg 300
ttccctccga ctttgcacc agtccagcct gttctaaaca cttaggttc agacatctc 360
agtcttccac attccggctt accaataaga ctttcagcat tgaatacggga tctgggacaa 420
tggaaaggaat tgttgctcat gacacagttc ggattgggga ctttctaagc actgaccagc 480
cgtttggct aagcatgaca gaatccgggt ttgagggat acctttgtt ggcgtcttgg 540
gcttgaacta ccccaacata tccttctctg gagccatccc catcttgac aagctgaaga 600
atcaaggtgc catttctgag cctgttttg ctttcttattt gagcaaagac gagcaggagg 660
gcagtgtggat gatgtttgggt ggggtggacc accgctacta caagggagag ctcaaattggg 720
taccattgtat tgaagcgggt gactggattt tacacatggta ctgcatttcc atgagaagaa 780
aggttattgc ttgttctggc ggctgtgagg ccgttgttga caccggggta tcaatgtca 840
aaggcccaa aacactgggt gataacatcc agaagctcat cggtgccact ctacggggtt 900
tcaagcacta cgtttcatgt tctgcagtcg ataccctgccc ctcttattacc ttcaccataa 960

acggtatcaa ctaccgagtg ccagctcgag cctacatcct caaggattct agaggctgct 1020
gctatagcag ctttcaagag accactgtga gtccatctac agagacctgg atcctgggtg 1080
acgtcttcct gagactgtat ttctcagtct ttgatcgagg aatgacagg attgggctgg 1140
cacggcaggt gtaa 1154

<210> 44
<211> 380
<212> PRT
<213> bovidae

<400> 44

Met	Lys	Trp	Leu	Val	Leu	Leu	Gly	Leu	Val	Ala	Phe	Ser	Glu	Cys	Val
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Val	Lys	Ile	Pro	Leu	Arg	Arg	Val	Lys	Thr	Met	Thr	Lys	Thr	Leu	Ser
	20						25					30			
Gly	Lys	Asn	Met	Leu	Asn	Asn	Phe	Leu	Lys	Glu	His	Ala	Tyr	Arg	Leu
	35				40					45					
Ser	Gln	Ile	Ser	Phe	His	Gly	Ser	Asn	Leu	Thr	Ile	His	Pro	Leu	Arg
	50				55				60						
Asn	Ile	Arg	Asp	Leu	Phe	Tyr	Met	Gly	Asn	Ile	Thr	Ile	Gly	Thr	Pro
	65			70				75				80			
Pro	Gln	Glu	Phe	Leu	Val	Val	Phe	Asp	Thr	Gly	Ser	Ser	Asp	Leu	Trp
		85				90				95					
Val	Pro	Ser	Asp	Phe	Cys	Thr	Ser	Pro	Ala	Cys	Ser	Lys	His	Phe	Arg
		100				105					110				
Phe	Arg	His	Leu	Gln	Ser	Ser	Thr	Phe	Arg	Leu	Thr	Asn	Lys	Thr	Phe
	115				120					125					
Ser	Ile	Glu	Tyr	Gly	Ser	Gly	Thr	Met	Glu	Gly	Ile	Val	Ala	His	Asp
	130				135				140						
Thr	Val	Arg	Ile	Gly	Asp	Leu	Val	Ser	Thr	Asp	Gln	Pro	Phe	Gly	Leu
	145				150				155			160			
Ser	Met	Thr	Glu	Ser	Gly	Phe	Glu	Gly	Ile	Pro	Phe	Asp	Gly	Val	Leu
		165				170				175					
Gly	Leu	Asn	Tyr	Pro	Asn	Ile	Ser	Phe	Ser	Gly	Ala	Ile	Pro	Ile	Phe
		180				185				190					
Asp	Lys	Leu	Lys	Asn	Gln	Gly	Ala	Ile	Ser	Glu	Pro	Val	Phe	Ala	Phe

195

200

205

Tyr Leu Ser Lys Asp Glu Gln Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Lys Trp Val Pro Leu Ile
225 230 235 240

Glu Ala Gly Asp Trp Ile Val His Met Asp Cys Ile Ser Met Arg Arg
245 250 255

Lys Val Ile Ala Cys Ser Gly Gly Cys Glu Ala Val Val Asp Thr Gly
260 265 270

Val Ser Met Ile Lys Gly Pro Lys Thr Leu Val Asp Asn Ile Gln Lys
275 280 285

Leu Ile Gly Ala Thr Leu Arg Gly Phe Lys His Tyr Val Ser Cys Ser
290 295 300

Ala Val Asp Thr Leu Pro Ser Ile Thr Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Arg Val Pro Ala Arg Ala Tyr Ile Leu Lys Asp Ser Arg Gly Cys
325 330 335

Cys Tyr Ser Ser Phe Gln Glu Thr Thr Val Ser Pro Ser Thr Glu Thr
340 345 350

Trp Ile Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 45

<211> 1168

<212> DNA

<213> bovidae

<400> 45

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tgaacaattt cttgaaggag catccttaca gactgtccca tatttctttt cgtggctcaa 180
atctaactac tctgccgctg agaaacatca gagatatgct ctacgtgggt aacatcacca 240
ttggaacacc ccctcaagaa ttccaggttg tcttgacac agttcatct gacttgtggg 300
tgccctctga cttttgcacc agtccagcct gttctacaca cgtaggttc agacatttc 360

agtcttccac cttccggcct accactaaga ccttcaggat catctatgga tctgggagaa 420
tgaaaggagt tgttgcgcat gacacagtgc ggattggaa cctttaagt actgaccagc 480
cgttcggcct aagcatggcg gaatacgggt tggagagcag aagatttgat ggcatctgg 540
gcttgaacta ccccaatcta tcctgctctg gggccattcc catcttgat aagctgaaga 600
atcaagggtgc catttctgat cctattttg ccttctactt gagcaaagac aagcgagagg 660
gcagtgtgg tggatgtggat ggggtggacc accgctacta caagggagag ctcaactggg 720
taccactgat tcgagcagg tgcactggattg tacacgtaga ccgcatcacc ataaaaagag 780
aggttattgc ttgttctgat ggctgcgcgg cccttggtaa cactggaca tcacttatcc 840
aaggcccagg aagagtgatc gataacatac acaagctcat tggtgccacg ccacggggtt 900
ccaagcatta cgtttcatgt tctgtggta atactctgcc ctctattatc ttcaccatca 960
atggcatcaa ctacccagtg ccagctccag cctacatcc caaggattct agaggctact 1020
gctataccgc ctttaaagag caaagagtga ggagatctac agagagctgg ttactgggtg 1080
acgtcttcct gaggctgtat ttctcagtct ttgatcgagg aaatgacagg attggcctgg 1140
cacgggcagt gtaactcgaa tcactagt 1168

<210> 46

<211> 380

<212> PRT

<213> bovidae

<400> 46

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Thr Leu Asn Asn Phe Leu Lys Glu His Pro Tyr Arg Leu
35 40 45

Ser His Ile Ser Phe Arg Gly Ser Asn Leu Thr Thr Leu Pro Leu Arg
50 55 60

Asn Ile Arg Asp Met Leu Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Asp Phe Cys Thr Ser Pro Ala Cys Ser Thr His Val Arg
100 105 110

Phe Arg His Phe Gln Ser Ser Thr Phe Arg Pro Thr Thr Lys Thr Phe
115 120 125

Arg Ile Ile Tyr Gly Ser Gly Arg Met Lys Gly Val Val Ala His Asp
130 135 140

Thr Val Arg Ile Gly Asn Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Met Ala Glu Tyr Gly Leu Glu Ser Arg Arg Phe Asp Gly Ile Leu
165 170 175

Gly Leu Asn Tyr Pro Asn Leu Ser Cys Ser Gly Ala Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Gln Gly Ala Ile Ser Asp Pro Ile Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Lys Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile
225 230 235 240

Arg Ala Gly Asp Trp Ile Val His Val Asp Arg Ile Thr Met Lys Arg
245 250 255

Glu Val Ile Ala Cys Ser Asp Gly Cys Ala Ala Leu Val Asp Thr Gly
260 265 270

Thr Ser Leu Ile Gln Gly Pro Gly Arg Val Ile Asp Asn Ile His Lys
275 280 285

Leu Ile Gly Ala Thr Pro Arg Gly Ser Lys His Tyr Val Ser Cys Ser
290 295 300

Val Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Ala Pro Ala Tyr Ile Leu Lys Asp Ser Arg Gly Tyr
325 330 335

Cys Tyr Thr Ala Phe Lys Glu Gln Arg Val Arg Arg Ser Thr Glu Ser
340 345 350

Trp Leu Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 47

<211> 1158

<212> DNA

<213> bovidae

<400> 47

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atgaagggtgc catttctgag cctgttttg ccttctactt gagcaaagac aagcgggagg 660
gcagtgtggt gatgtttgggt ggggtggacc accgctacta caagggagag ctcaactggg 720
tgccattgtat ccaagcgggc ggctggactg tacacgtggaa ccgcatctcc atgaaaagaa 780
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gctatacaac cttaaagag aacacagtga ggacgtctag agagacctgg atcctgggtg 1080
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<210> 48

<211> 380

<212> PRT

<213> bovidae

<400> 48

Met Lys Trp Leu Val Leu Leu Trp Leu Val Ala Phe Ser Glu Cys Ile
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Val Lys Ile Pro Leu Arg Gln Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Thr Leu Asn Asn Phe Leu Lys Glu His Thr Tyr Ser Leu
35 40 45

Ser Gln Ile Ser Ser Arg Gly Ser Asn Leu Thr Ile His Pro Leu Arg
50 55 60

Asn Ile Met Asp Met Leu Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Val Phe Cys Gln Ser Leu Ala Cys Ala Thr Lys Val Met
100 105 110

Phe Ile His Leu His Ser Ser Thr Phe Arg His Thr Gln Lys Val Phe
115 120 125

Asn Ile Lys Tyr Asn Thr Gly Arg Met Lys Gly Leu Leu Val Tyr Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Cys Ile
145 150 155 160

Ser Leu Ala Glu Val Gly Phe Asp Gly Ile Pro Phe Asp Gly Val Leu
165 170 175

Gly Leu Asn Tyr Pro Asn Met Ser Phe Ser Gly Ala Ile Pro Ile Phe
180 185 190

Asp Asn Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Lys Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile
225 230 235 240

Gln Ala Gly Gly Trp Thr Val His Val Asp Arg Ile Ser Met Lys Arg
245 250 255

Lys Ile Ile Ala Cys Ser Gly Gly Cys Glu Ala Leu Val Asp Thr Gly
260 265 270

Thr Ala Leu Ile Lys Gly Pro Arg Arg Leu Val Asn Asn Ile Gln Lys
275 280 285

Leu Ile Gly Thr Thr Pro Arg Gly Ser Lys His Tyr Val Ser Cys Ser
290 295 300

Val Val Asn Thr Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Ala Arg Ala Tyr Ile Leu Lys Asp Ser Glu Ser Asn
325 330 335

Cys Tyr Thr Thr Phe Lys Glu Asn Thr Val Arg Thr Ser Arg Glu Thr
340 345 350

Trp Ile Leu Gly Asp Val Phe Pro Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 49
<211> 1158
<212> DNA
<213> bovidae

<400> 49
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ctgaacaatt tcctgaagga acatgcttac agactgtccc agatttcttc ttgtggctca 180
aatctaactt ttcacccctt gagaaacatc aaggataggc tctacgtggg taacatcacc 240
attggAACAC cccctcaaga attccaggtt atcttgaca caggctcatc tgacttgg 300
gtgacctccg tctttgcac cagcccaacc tggctcacac atgttatgtt cagacatttt 360
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ccatttggtc taagtgtggt ggaacttggg tttgatggta tacctttga tggcgtcatg 540
ggcttgaact accccaaact atccttctct ggagccattc ccattttga caacctgagg 600
aatcaagggtg ccatttctga gcctgtttt gccttctact tgagcaaaga cgagcaggag 660
ggcagtgtgg ttagtggg tgggtggac caccgctact acaagggaga gctcaactgg 720
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aaggttattt cttgtctgg tggctgcaag gccgttggg acaccgggac atcactgatt 840
gaaggcccaa gaagactggt caataacata cagaagctca tcagagccat gccacggggt 900
tccgagttact acgtttcatg ttctgcggc aataccctgc cccctattat ctccaccatc 960
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ctggcacggg cagtgtaa 1158

<210> 50
<211> 381
<212> PRT
<213> bovidae

<400> 50
Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
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20 25 30

Gly Lys Asn Ile Leu Asn Asn Phe Leu Lys Glu His Ala Tyr Arg Leu

35

40

45

Ser Gln Ile Ser Ser Cys Gly Ser Asn Leu Thr Phe His Pro Leu Arg
 50 55 60

Asn Ile Lys Asp Arg Leu Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
 65 70 75 80

Pro Gln Glu Phe Gln Val Ile Phe Asp Thr Gly Ser Ser Asp Leu Trp
 85 90 95

Val Thr Ser Val Phe Cys Thr Ser Pro Thr Cys Ser Thr His Val Met
 100 105 110

Phe Arg His Phe Asp Ser Ser Thr Phe Arg Pro Thr Lys Lys Thr Phe
 115 120 125

Ser Ile Asn Tyr Gly Ser Gly Arg Met Lys Gly Val Val Val His Asp
 130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
 145 150 155 160

Ser Val Val Glu Leu Gly Phe Asp Gly Ile Pro Phe Asp Gly Val Met
 165 170 175

Gly Leu Asn Tyr Pro Lys Leu Ser Phe Ser Gly Ala Ile Pro Ile Phe
 180 185 190

Asp Asn Leu Arg Asn Gln Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
 195 200 205

Tyr Leu Ser Lys Asp Glu Gln Glu Gly Ser Val Val Met Phe Gly Gly
 210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Ile Pro Leu Ile
 225 230 235 240

Gln Ala Gly Asp Trp Ser Val His Met Asp Ser Ile Ser Met Lys Arg
 245 250 255

Lys Val Ile Ala Cys Ser Gly Gly Cys Lys Ala Val Val Asp Thr Gly
 260 265 270

Thr Ser Leu Ile Glu Gly Pro Arg Arg Leu Val Asn Asn Ile Gln Lys
 275 280 285

Leu Ile Arg Ala Met Pro Arg Gly Ser Glu Tyr Tyr Val Ser Cys Ser

290

295

300

Ala Val Asn Thr Leu Pro Pro Ile Ile Phe Thr Ile Lys Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Ala Gln Ala Tyr Ile Leu Lys Asp Ser Arg Gly His
325 330 335

Cys Tyr Thr Thr Phe Lys Glu Asp Arg Leu Ser Pro Pro Ser Thr Glu
340 345 350

Thr Trp Ile Leu Gly Asp Val Phe Leu Arg Arg Tyr Phe Ser Val Phe
355 360 365

Asp Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 51

<211> 1154

<212> DNA

<213> bovidae

<400> 51

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tgaacaattt cctgaaggaa catgcttaca gactgtccca gatttcttt cgtggctcaa 180
atctaactag tcacccgctg agaaaacatca aggatttggt ctacctggct aatatcacca 240
ttggaacacc ccctcaggag ttccaggttt tccttgacac aggctcatct gacttgtggg 300
tgccctctga ctttgcacc agcccaggct gttctaaaca cgtagattc agacatctc 360
agtcttccac cttccggctt accaataaga ccttcagcat cacctatgga tctgggagaa 420
ttaaaggagt tggcgtcat gacacagttc ggattgggga cttgttaagc actgaccagc 480
cgttcagtct aagcatggca gaatacgggc ttgagcatat acctttgtat ggcatcttg 540
gcttgaacta ccccaacgta tcttcttctg gagcaatccc tatcttgac aagctgaaga 600
atcaaggtgc catttctgaa cctgttttg ccttctactt gagcaaagac aagcaggagg 660
gcagtgtggat gatgtttgggt ggggtggacc atcgcttata cagggaaaag ctcaactggg 720
taccattgtat ccaagcggga aactggatta tacacatgga cagcatctcc attgaaagaa 780
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<210> 52

<211> 380

<212> PRT

<213> bovidae

<400> 52

Met Lys Trp Leu Val Val Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
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Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Ala Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu His Ala Tyr Arg Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Ser His Pro Leu Arg
50 55 60

Asn Ile Lys Asp Leu Val Tyr Leu Ala Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Phe Leu Asp Thr Gly Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Asp Phe Cys Thr Ser Pro Gly Cys Ser Lys His Val Arg
100 105 110

Phe Arg His Leu Gln Ser Ser Thr Phe Arg Leu Thr Asn Lys Thr Phe
115 120 125

Ser Ile Thr Tyr Gly Ser Gly Arg Ile Lys Gly Val Val Ala His Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Ser Leu
145 150 155 160

Ser Met Ala Glu Tyr Gly Leu Glu His Ile Pro Phe Asp Gly Ile Leu
165 170 175

Gly Leu Asn Tyr Pro Asn Val Ser Ser Ser Gly Ala Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Gln Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Lys Gln Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Arg Gly Lys Leu Asn Trp Val Pro Leu Ile
225 230 235 240

Gln Ala Gly Asn Trp Ile Ile His Met Asp Ser Ile Ser Ile Glu Arg
245 250 255

Lys Val Ile Ala Cys Ser Gly Gly Cys Val Ala Phe Val Asp Ile Gly
260 265 270

Thr Ala Phe Ile Glu Gly Pro Lys Pro Leu Val Asp Asn Met Gln Lys
275 280 285

Leu Ile Arg Ala Lys Pro Trp Arg Ser Lys His Tyr Val Ser Cys Ser
290 295 300

Ala Val Asn Thr Leu Pro Ser Ile Thr Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Gly Arg Ala Tyr Ile Leu Lys Asp Ser Arg Arg Arg
325 330 335

Cys Tyr Ser Thr Phe Lys Glu Ile Pro Leu Ser Pro Thr Thr Glu Phe
340 345 350

Trp Met Leu Gly Asp Val Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 53

<211> 1154

<212> DNA

<213> bovidae

<400> 53

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tgaacaattt cctgaaggag catccttaca aactgtccca gatttctttt cgtggctcaa 180
atctaaccac tctcccactg aggaacatct gggatatatatt ctacataggt accatcacca 240
ttggAACACC ccctcaggaa ttccagggtt tctttgacac agcctcatct gacttgggg 300
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agtcttccac cttccggctt accaataaga cgttcgggat cacgtatggaa tctgggagaa 420
tgaaaaggagt tgggtttcat gacacagttc ggattggggaa ccttgcatagt actgaccaggc 480
cattcggtct aagcgtggcg gaatacgggt ttgagggcag aagatttgat ggtgtcttgg 540
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atgaagggtgc catttcagag cctgttttttgc cttctactt gagcaaagac aagcagaagg 660
gcagtgtggat gatgtttgggt ggggtggacc accgctacta caaaggagag ctcaactggg 720
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gctacaccac cttaaagag aaaaggtaa ggagatctac ggagttctgg atcctgggtg 1080
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cacggcagt gtaa 1154

<210> 54

<211> 380

<212> PRT

<213> bovidae

<400> 54

Met Lys Trp Leu Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
1 5 10 15

Phe Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu His Pro Tyr Lys Leu
35 40 45

Ser Gln Ile Ser Phe Arg Gly Ser Asn Leu Thr Thr Leu Pro Leu Arg
50 55 60

Asn Ile Trp Asp Ile Phe Tyr Ile Gly Thr Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Ala Ser Ser Asp Leu Trp
85 90 95

Val Pro Ser Ile Ile Cys Asn Ser Ser Thr Cys Ser Thr His Val Arg
100 105 110

Phe Arg His Arg Gln Ser Ser Thr Phe Arg Leu Thr Asn Lys Thr Phe
115 120 125

Gly Ile Thr Tyr Gly Ser Gly Arg Met Lys Gly Val Val Val His Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Val Ala Glu Tyr Gly Phe Glu Gly Arg Arg Phe Asp Gly Val Leu
165 170 175

Gly Leu Asn Tyr Pro Asn Ile Ser Phe Ser Lys Ala Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Val Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Asp Lys Gln Lys Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile
225 230 235 240

Arg Ala Gly Asp Trp Ser Val His Val Asp Arg Ile Thr Met Lys Gly
245 250 255

Glu Val Ile Gly Cys Ser Asp Gly Cys Thr Ala Met Val Asp Thr Gly
260 265 270

Ser Ser Asn Ile Gln Gly Pro Gly Arg Val Ile Asp Asn Ile His Lys
275 280 285

Leu Ile Gly Ala Thr Pro Arg Gly Ser Lys His Tyr Val Ser Cys Ser
290 295 300

Ala Val Ser Ala Leu Pro Ser Val Val Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Ala Arg Ala Tyr Val Leu Lys Asp Phe Thr Gly Asn
325 330 335

Cys Tyr Thr Thr Phe Lys Glu Lys Arg Val Arg Arg Ser Thr Glu Phe
340 345 350

Trp Ile Leu Gly Glu Ala Phe Leu Arg Leu Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Asp Arg Ile Gly Leu Ala Arg Ala Val
370 375 380

<210> 55

<211> 1320

<212> DNA

<213> bovidae

<400> 55

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catgctgaac aatttcttga aggagcatgg taacagattt tccaaagattt ctttcgtgg 180
ctcaaatcta actactctcc cgctgagaaa catcgaggat ttgatgtacg tgggttaacat 240

caccattgga acaccccccac aggaattcca ggttgcctt gatacaggct catctgactt 300
ttgggtgcc tccacttt gcactagtcc agactgtatt acacacgtta gattcagaca 360
acatcagtct tccaccccttcc ggcctaccaa taagaccttc agcatcacct atggatctgg 420
gagaatgaga ggagttgttgc ttcatgacac agttcgatt ggggaccttgc taagtactga 480
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acacactcac tcacactagg gcactcctgc ccaggatggt ggtgaactgt atttgggtgt 1260
ctgtacaccc tattctcagt gaagaataaa cggtttcaact cttaatggtg ctgaaaaaaaa 1320

<210> 56

<211> 380

<212> PRT

<213> bovidae

<400> 56

Met Lys Trp Val Val Leu Leu Gly Leu Val Ala Phe Ser Glu Cys Ile
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Val Lys Ile Pro Leu Arg Arg Val Lys Thr Met Arg Lys Thr Leu Ser
20 25 30

Gly Lys Asn Met Leu Asn Asn Phe Leu Lys Glu His Gly Asn Arg Leu
35 40 45

Ser Lys Ile Ser Phe Arg Gly Ser Asn Leu Thr Thr Leu Pro Leu Arg
50 55 60

Asn Ile Glu Asp Leu Met Tyr Val Gly Asn Ile Thr Ile Gly Thr Pro
65 70 75 80

Pro Gln Glu Phe Gln Val Val Phe Asp Thr Gly Ser Ser Asp Phe Trp
85 90 95

Val Pro Ser Asp Phe Cys Thr Ser Pro Asp Cys Ile Thr His Val Arg
100 105 110

Phe Arg Gln His Gln Ser Ser Thr Phe Arg Pro Thr Asn Lys Thr Phe
115 120 125

Ser Ile Thr Tyr Gly Ser Gly Arg Met Arg Gly Val Val Val His Asp
130 135 140

Thr Val Arg Ile Gly Asp Leu Val Ser Thr Asp Gln Pro Phe Gly Leu
145 150 155 160

Ser Val Ser Glu Tyr Gly Phe Lys Asp Arg Ala Tyr Asp Gly Ile Leu
165 170 175

Gly Leu Asn Tyr Pro Asp Glu Ser Phe Ser Glu Ala Ile Pro Ile Phe
180 185 190

Asp Lys Leu Lys Asn Glu Gly Ala Ile Ser Glu Pro Ile Phe Ala Phe
195 200 205

Tyr Leu Ser Lys Lys Arg Glu Gly Ser Val Val Met Phe Gly Gly
210 215 220

Val Asp His Arg Tyr Tyr Lys Gly Glu Leu Asn Trp Val Pro Leu Ile
225 230 235 240

Glu Glu Gly Asp Trp Ser Val Arg Met Asp Gly Ile Ser Met Lys Thr
245 250 255

Lys Val Val Ala Cys Ser Asp Gly Cys Glu Ala Val Val Asp Thr Gly
260 265 270

Thr Ser Leu Ile Lys Gly Pro Arg Lys Leu Val Asn Lys Ile Gln Lys
275 280 285

Leu Ile Gly Ala Thr Pro Arg Gly Ser Lys His Tyr Val Tyr Cys Ser
290 295 300

Ala Val Asn Ala Leu Pro Ser Ile Ile Phe Thr Ile Asn Gly Ile Asn
305 310 315 320

Tyr Pro Val Pro Ala Arg Ala Tyr Ile Leu Lys Asp Ser Arg Gly Arg
325 330 335

Cys Tyr Thr Ala Phe Lys Lys Gln Arg Phe Ser Ser Ser Thr Glu Thr
340 345 350

Trp Leu Leu Gly Asp Ala Phe Leu Arg Val Tyr Phe Ser Val Phe Asp
355 360 365

Arg Gly Asn Gly Arg Ile Gly Leu Ala Gln Ala Val
370 375 380

குடும்பத்தின் முனிசிபாலிடி முதலாவது பார்லிமெண்ட் முனிசிபாலிடி முதலாவது பார்லிமெண்ட்